AMERICAN CINEMATOGRAPHER

The Motion Picture CAMERA Magazine

25c

March,
1936

Published in Hollywood,
by
American Society of
Cinematographers

this issue

Making Pictures in England
Training Makes Triumphs
Rapid Processing Methods
Clouds Made to Order
Correct Photographic
Reproduction
. . . and other features

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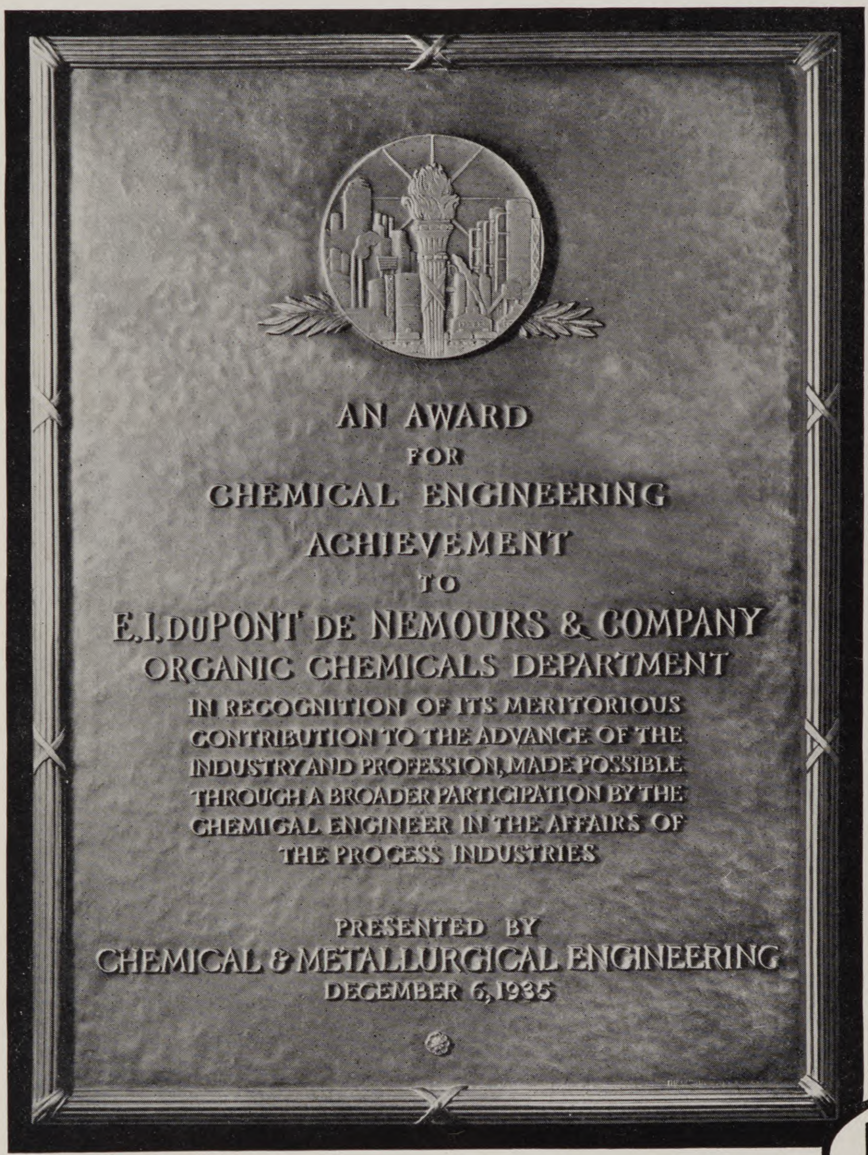

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AMERICAN CINEMATOGRAPHER

A Technical and Educational publication
of motion picture photography.

Published monthly by the
AMERICAN SOCIETY
OF CINEMATOGRAPHERS, INC.
6331 Hollywood Boulevard
Hollywood, California

Telephone GRanite 2135

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Next Month

● We have already prepared a full and detailed description of a professional color process which will soon be employed by one of the major studios in Hollywood.

● Also we have a fine article on lighting color by Cameraman Skall who is now shooting the latest Pioneer color opus.

● Dr. Meyer will give us another of his articles on Controlling Photographic Reproductions and we will give the concluding installment on the series, titled "Rapid Processing Methods."

ESTABLISHED 1918. Advertising Rates on application. Subscription: U.S. $2.50 a year; Canada $3.50 a year; Foreign $3.50 a year. Single copies 25c; back numbers 30c. Foreign single copies 35c; back numbers 40c. COPYRIGHT 1936 by American Society of Cinematographers, Inc.

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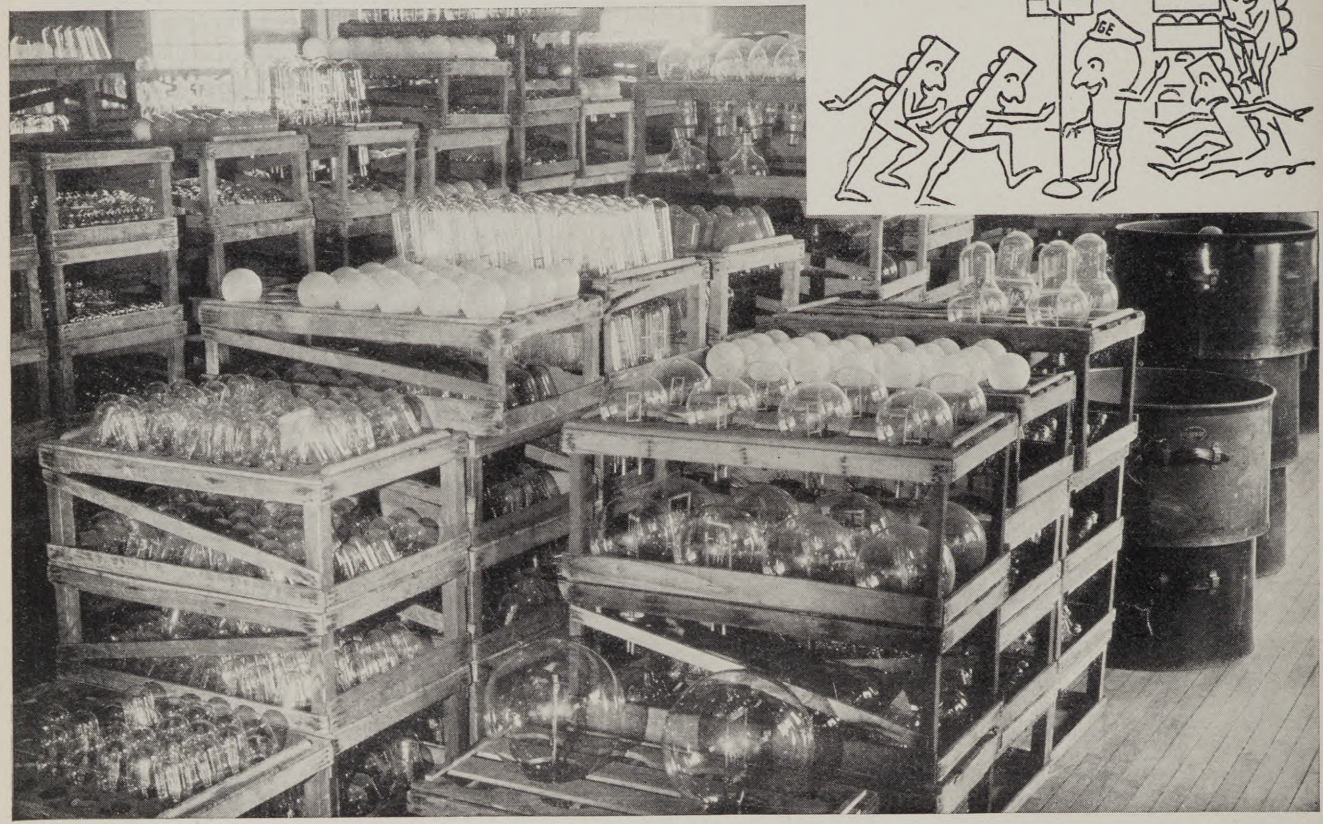

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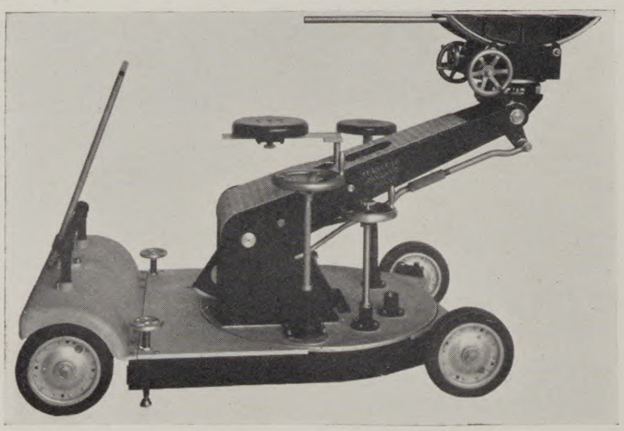

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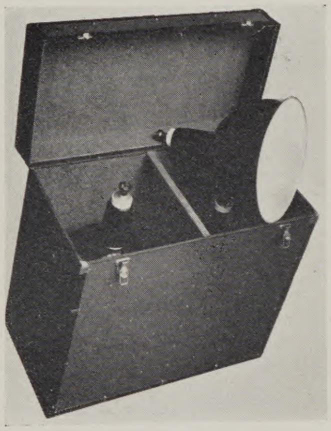

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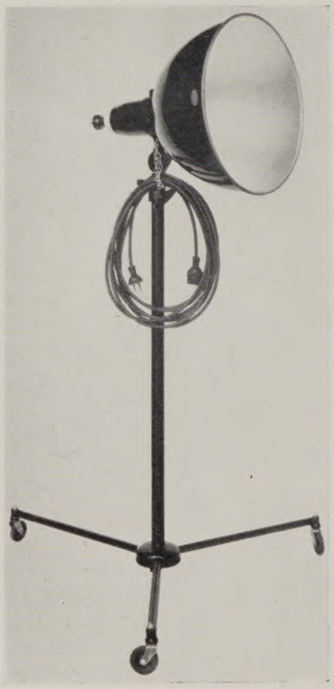

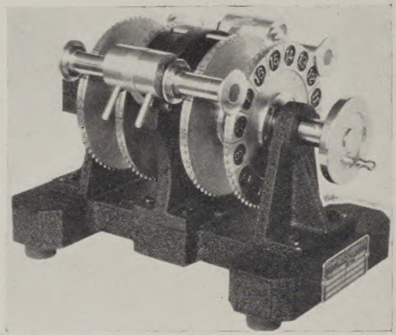

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Harry Burdick

Charles Lang, A.S.C.

WE have a new and second generation of ace cinematographers in this center of cinema circles. And a younger generation, in contradistinction to the old-line guard of camera wizards who have been performing photographic miracles since the very advent of sprocket-holed celluloid some twenty-five years ago.

As illustrious instance of this encouraging influence is nominated Charles Lang, A.S.C. In office as Director of Photography for the relatively narrow span of six years, from his camera have issued such outstanding cinematographic creations as "Lives Of A Bengal Lancer," "Peter Ibbetson," "Desire" and, currently, "I Loved A Soldier," the latter duo being portrayals of Marlene Dietrich.

Here, certainly, is a recent succession of notable achievements worthy of the most matured artist. Each work is of merit compelling comment. His "A Farewell To Arms" brought to him the Academy of Motion Picture Arts and Sciences gold award in 1934. Annual appraisals by professionally discerning critics find his name high in reigning practitioners of the period.

Lang's meteoric ascent to cinematographic prominence is by no means a quirk of happenstance. Under it lies the same type of studious preparation and devoted acquirement of experience that marks the progress of ambitious members of medical, law and other professions. Following the framing of his university sheepskin, Lang got himself a job in the Paramount laboratory. It was just that and nothing more—a job. But it was, in reality, the launching of his life career, for during following years he was assigned to every department in that laboratory. Applying himself industriously and intelligently, he obtained by this laborious route complete understanding of what happens to negative and why.

Came long apprenticeships as Assistant and then Operative Cinematographer, learning stage technique and camera mechanics from the genius of established masters.

So, when opportunity presented him with complete control, it is not surprising that his broad and comprehensive steeping in fundamentals should show fruition in notable productions of exceeding worth.

He goes about his work calmly but with the fervor of the sharp specialist. He has the confidence inspired by his training, moves surely and swiftly. Scenes flow past his lenses with remarkable smoothness and speed, a phase not unappreciated by acting personnel nor keen-eyed production officials.

His two Dietrich sagas are superb specimens of prestige-star lighting. A definite controlled source of illumination is employed throughout. A high front-light paints glamorous tones over the star's features. There is much shading and gauzing.

He lights individuals, not scenes; and then blends them into a scenic unity of balanced composition. The star is maintained as his photographic focal point but not to the detriment of other players nor the scene in its entirety.

This principle is observed irrespective of mood demanded by varying degrees of drama in story. The two Dietrich films are good instance. "I Loved a Soldier" has to do with a peasant chambermaid of the post-war period in Austria. It is in somewhat low key.

"Desire," dealing with an ultra-smart modern woman in sophisticated environment is far more brilliant and photographically scintillating. There is exposition of more contrast tonally. For every highlight there is an area of impenetrable black. The more intense the drama, the wider are these expanses of deep blacks.

But under both treatments, his shrewd sense of individual lighting prevails and with these italicized characters welded into harmonious scenic balance.

"Peter Ibbetson" provided intricate problems of precise poise in mood determination. It required an obvious dream quality, yet that of a living dream; a feeling of reality in dream. There was much diffusion done at exact levels. Then, for the reminder of reality, Lang poured strong shafts of very real light in through opened windows and doors.

An absolute opposite is the "Bengal Lancer" undertaking. Here is definiteness of action, powerful flow of masculine movement. Lang evolved a strictly masculine mood with strong, robust and virile light. While he is blessed with an inherent drama sense, he appreciates the full audience appeal of bold strokes of sheer beauty, as this picture reveals, When the picture embarked on its commercial travels, box-office reports from all quarters acclaimed the appeal of this sweeping artistic ingredient. Some critics went so far as to assert this dominant beauty content actually carried the film.

Lang pursues his camera career unmanacled by "white elephants" of precedent or studio tradition. To his work he infuses the courage and enthusiasm of the artist who

Continued on page 105

Making Pictures in England

by
Lloyd Knechtel A.S.C.

Lloyd Knechtel, A.S.C.

SLIGHTLY over three years ago, in a Hollywood studio, I met a gentleman from the Humphries Laboratory of London. I must have been amused at the enthusiasm he showed in talking about the future of the British film industry, for I remember he left me with the remark, "Don't laugh—you'll probably be working with us in England yourself someday!" Less than six months later I was in England, associated with the Humphries Laboratories, and in charge of an Optical Printing and special process department which served most of the British studios! And during the three years which have elapsed since then, I have seen many of my friend's prophecies fulfilled, and even exceeded, by the phenomenal growth of the British Cinema.

To date things accurately, I arrived in England just as "The Private Life of Henry VIII" was in production; in fact, that film was one of the first British pictures on which I did any work. Up to that time, few even of the English had taken their film-industry seriously—and on wonder, for most of the activity in British studios had consisted of turning out "quota pictures" on budgets and schedules that would cramp the style of a poverty row quickie producer. Since "Henry VIII," of course, British pictures have improved until today you've got to look closely at the trade-mark to tell whether a film was made in Hollywood or England.

The foundation of this improvement was of course due to the fact that once Korda had proven it possible to make outstanding pictures in England, money became plentifully available for production. And a tremendous factor in the physical improvement of British films is that once the money was available, the British industry was eager to obtain the latest in equipment, and the most capable technicians.

The equipment used is predominantly American. An American raw-stock—Eastman—seems to be the most popular film: strangely enough, in a country where so many excellent plates and photographic papers are produced, no English firm seems to have entered the motion picture film field, leaving it wholly to foreign interests; Eastman, DuPont and Agfa, with Eastman getting the lion's share of the business.

The camera equipment used depends very greatly upon the nationality of the Cinematographer using it. The Mitchell is fast becoming the most popular type for all classes of work; but the numerous German Cinematographers who have emigrated to England frequently use the French-made DeBrie "Super-Parvo," which is a compact outfit built into its own soundproof case. One studio for some time used a Czecho-Slovakian camera called the "Cinephon," but recently discarded them in favor of Mitchells. Some British-made Vinten cameras are also to be seen. The European-made cameras while beautiful examples of design and workmanship, do not seem to stand up as well under the hard usage of modern production as well as do the American Mitchells.

Lighting equipment, too, is mainly American, with the Mole-Richardson types the most popular. There are a few small British firms, but their products cannot compete with American lamps. There is nothing in Europe that can compare with the new Mole-Richardson "Solarspots".

George Teague's background projectors are being used in a number of the studios, and have that field pretty well to themselves.

A few years ago, the weakest point in the British film industry undoubtedly was the lack of good laboratories. I recall reading an article written in this magazine only a few years ago by a director who had made a number of pictures in England, which stated that there were only two good laboratories in all Europe—and neither of the two mentioned was in England. This situation has very definitely been remedied, and today the laboratories serving the British studios, and printing foreign releases for American producers are second to none. There are, I think, fewer studio-owned labs there than in Hollywood, and a greater tendency on the part of producers to patronize outside laboratories.

In sound, the familiar ERPI and RCA systems are evident, but several studios use British systems, especially British Acoustic and B-T-H, which are both excellent.

Most recently, England has grown intensely interested in color, and new or nearly-new color-processes are springing up overnight like so many weeds. As is well known, Technicolor is putting up a plant near London, and as Hollywood has already proved Technicolor's three-color process, the

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Rapid

D-72

	Avoirdupois	Metric
Water (about 125°F.) (52°C.)	16 ounces	500.0 cc.
Elon	45 ounces	3.1 grams
Sodium sulfite, desiccated	1½ ounces	45.0 grams
Hydroquinone	175 grains	12.0 grams
Sodium carbonate, desiccated	2¼ ounces	67.5 grams
Potassium bromide	27 grains	1.9 grams
Water to make	32 ounces	1.0 grams

CHROME ALUM FIXING BATH

(F-23)

Solution A	Avoirdupois	Metric
Sodium thiosulfate (hypo)	2 pounds	960.0 grams
Sodium sulfite, desiccated	1 oz. 290 grains	50.0 grams
Water to make	96 ounces	3.0 liters
Solution B		
Water	20 ounces	600.0 cc.
Sodium sulfite, desiccated	290 grains	20.0 grams
Sulphuric acid, 5%	5 fluid ozs.	160.0 cc.
Pottassium chrome alum	4¼ ounces	128.0 grams
Water to make	32 ounces	1.0 liter

Dissolve the constituents of Solution A and Solution B and cool bath to 70°F. (21°C.). Add Solution B slowly to Solution A while stirring the latter thoroughly.

CAUSTIC PROCESS DEVELOPER

(D-9)

Stock Solution A	Avoirdupois	Metric
Water (about 125°F.) (52°C.)	16 ounces	500.0 cc.
Sodium bisulfite	¾ ounce	22.5 grams
Hydroquinone	¾ ounce	22.5 grams
Potassium bromide	¾ ounce	22.5 grams
Cold water to make	32 ounces	1.0 liter
Stock Solution B		
Cold water	32 ounces	1.0 liter
Sodium hydroxide	1¾ ounces	52.5 grams

For use up to 90°F., mix equal parts of A and B, and add 10 cc. of formalin (40%) and 10 cc. of Phenosafranine solution (1:1000) per liter of mixed developer (2½ drams per 32 ounces).

ULTRA RAPID DEVELOPERS

When the film can be processed by machine, and development times of 1 minute or less are desired, the D-82 developer, with 10 grams of extra sodium hydroxide added per liter (150 grains per 32 ounces), or the D-8 developer may be used. If the required development time is of the order of ½ minute, it may be desirable to add 25 cc. of ammonia to the modified D-82 developer.

D-82

	Avoirdupois	Metric
Elon	200 grains	14.0 grams
Sodium sulfite, desiccated	1¾ ounces	52.5 grams
Hydronquinone	200 grains	14.0 grams
Sodium hydroxide	125 grains	8.8 grams
Potassium bromide	125 grains	8.8 grams
Wood alcohol	1½ ounces	48.0 cc.
Water to make	32 ounces	1.0 liter

Other Rapid Developers

IN TABLES I AND II are also given the development characteristics of several rapid single bath developers for short times of development. The values listed are: gamma which is a measure of the degree of development; fog: relative emulsion speed, which is a comparative measure of the ability of the emulsion to render shadow detail; and highlight density, which is a rough indication of the density contrast obtained in a normally exposed negative of a subject of average contrast. It must be remembered that these are the values found under a given set of conditions as to quantity of developer, size of film, agitation during development, and so on, and that they will vary if any of these conditions are altered. However, although the absolute values will vary, the relations between the different developers will change very little if at all. It should also be noted that the indicated speed ratings are on a purely arbitrary basis, and are not directly related to the speed systems used with the various exposure calculators and exposure meters. The ratio factor necessary to convert these values to the system used with any given device can be determined from a test with some one developer, such as the SD-6 two bath, or the D-72.

The developers listed fall into two classes, those suitable for hand processing, and those which are only suitable for ultra rapid development in special processing machines. These very rapid developers are not suitable for hand processing because the development times must be so short, in order to avoid excessive contrast, that there is not time to obtain uniform development over the whole surface of the film.

When the processing is done by hand, under the conditions mentioned previously, that is, where temperatures above normal may be encountered with no time available for cooling the solutions, the D-72 developer and the D-9 process developer with 1 per cent of formalin added, have been found very satisfactory.

In most cases, the D-72 developer is probably preferable, since it can be used for plates, films, and papers. Also it is more stable and oxidizes only slowly even when left standing in a tray.

This developer has a temperature coefficient of, roughly, 1.5 for a temperature change of 10°F. This means that to get approximately equal degrees of development at different temperatures, the development time must be divided by 1.5 for a 10 degree rise in temperature, and multiplied by 1.5 for a 10 degree drop in temperature. A time-temperature table is given on next page.

This developer has a sufficiently high concentration of salts to prevent excessive swelling up to 80°F., but it does not permanently harden the film so that an efficient hardening fixing bath must be used, and the film fixed long enough to allow of thorough hardening. The F-5 fixing bath may be used at normal temperatures but at the higher temperatures, the F-25 chrome alum hardening fixing bath should be used and the film treated for at least 3 minutes and preferably longer. With the chrome alum bath particularly, there is danger of scum forming on the bath from the neutralization of the fixing bath by the developer, so that the film should be rinsed for a few seconds in an acid bath such as the SB-1 after development, and then agitated thoroughly while it is in the fixing bath. Fresh fixing solutions should always be used for this work. The chrome alum fixing bath has the objection that it does not keep well, so it should be made up in small quantities which can be used in a few days.

In cases where temperatures higher than 80°F. must be used, the D-72 developer, even in combination with the chrome alum fixing bath, is not satisfactory. In such cases the D-9 caustic hydroquinone process developer may be used with the addition of 10 cc. of formalin (40% solution) per liter of the mixed developer to harden the film. Ten cc. of a 1 to 1000 solution of phenosafranine should also be added to prevent the formation of aerial fog which might be caused by the formalin. This developer, as the tables show, has a slightly higher rate of development than D-72, so the times given above or somewhat shorter times, may be used. This developer has poor keeping properties after it is mixed and should be used immediately. The F-5 fixing bath gives good results with this developer although an ultra rapid fixing bath can be used, as with the two bath developer. This developer gives good results at temperatures up to 90°F. but cannot be used satisfactorily at temperatures above 90°F.

It can be seen from the data given in the table that this addition of formalin to the D-9 developer causes a slight

Processing Methods

PART 2

by

H. Parker and J. I. Crabtree

Communication No. 577 from the
Kodak Research Laboratories

increase in the development fog, a slight decrease in the emulsion speed, and a very slight decrease in the rate of development.

More complete information on regular processing methods (not rapid processing) at high temperatures is given elsewhere.

Ultra Rapid Developers for Machine Processing

When it is possible to develop by machine as, for instance, with motion picture film, it is sometimes desirable to obtain high densities in very short times of development. With machine processing the treatment of the film can be controlled much more uniformly than is possible with hand processing, and it is quite satisfactory, therefore, to use very short times and very active developers.

A considerable number of developer formulas have been tested to determine their usefulness with very short development times and the data obtained for the most satisfactory formulas are given in the tables. These results show that when good contrast, with the greatest emulsion speed (ability to reproduce shadow detail) is desired in a very short time of development (1 minute or less), formula D-82 with the addition of 10 grams per liter of sodium hydroxide gives the most satisfactory results. This addition of extra sodium hydroxide to the D-82 developer causes a very considerable increase in the rate of development, so that considerably higher gammas are obtained. For the very short times of development, higher emulsion speeds are also obtained. It should be noted, however, that for the longer times of development, or for comparisons made at equal gammas, this advantage is lost, and the unmodified D-82 gives just as high emulsion speeds. For very short development times, around 30 seconds or less, it may be desirable to add 25 cc. of ammonia per liter to the modified D-82 developer. This addition is not satisfactory when development times of 1 minute or longer are used, because of the very rapid growth of fog, but for the very short times, it does help to obtain higher emulsion speeds. When the highest possible contrast is desired, the D-8 developer may prove more useful, but it should be noted that for a given exposure and equal times of development the D-8 does not give as high a density as the D-82 with the extra sodium hydroxide for, although it gives a higher gamma, it gives a much lower emulsion speed. When a high contrast is undesirable, but it is wished to obtain high emulsion speed without excessive density in the highlights, the D-82 and D-9 developers give better results than the two higher contrast developers.

D-8

	Avoirdupois	Metric
Sodium sulfite, desiccated	2 ounces	60 grams
Hydroquinone	1 ounce	30 grams
Sodium hydroxide	365 grains	25 grams
Potassium bromide	292 grains	20 grams
Water to make	32 ounces	1 liter

DEVELOPERS FOR UNDEREXPOSURES

When it is desired to obtain the utmost possible shadow detail from underexposed negatives, the D-82 developer for underexposures should be used, with a development time of about 8 minutes at 65° F.

ULTRA RAPID FIXATION

When rapid fixation is desired the hypo concentration of the fixing bath should be increased to 360 grams per liter (12 ounces per 32 ounces). If still more rapid fixation is desired, a non-hardening acid bath with added ammonium chloride may be used. Such a bath should only be used, however, with the two bath developer or with the D-9 developer containing formalin, both of which harden the film, and the use of an acid rinse bath between development and fixation is most important. The F-24 formula is very suitable for this purpose.

NON-HARDENING ACID FIXING BATH

(F-24)

	Avoirdupois	Metric
Water (about 125° F.) (52° C.)	16 ounces	500.0 cc.
Sodium thiosulfate (hypo)	8 ounces	240.0 grams
Sodium sulfite, desiccated	145 grains	10.0 grams
Sodium bisulfite	365 grains	25.0 grams
Water to make	32 ounces	1.0 liter

To make an ultra rapid fixing bath, the hypo concentration should be increased to 360 grams per liter (12 ounces per 32 ounces) and 25 grams of ammonium chloride added per liter of solution (365 grains per 32 ounces of solution).

While all of these developers give much more rapid development at higher temperatures, it is definitely unsafe to use them at high temperatures because of the danger of excessive swelling of the gelatin film.

Developers for Underexposures

The practical value of a developer for treating extreme under exposures is determined by the minimum exposure value which the developer is capable of differentiating from the development fog under the optimum conditions of development. Experience has shown that for Super-sensitive Panchromatic film treated in these high energy developers, the optimum rendering of shadow detail is obtained when the development is continued until the fog has a density of approximately 0.3 to 0.4. If the development is forced beyond this point, the fog begins to increase more rapidly, so that it tends to obscure some of the shadow detail. As can be seen from Table II, which gives the data for several developers, the gammas obtained at these optimum times of development range between 1.20 and 1.60. Under these conditions of development formulas D-9, D-82 and D-82 with added sodium hydroxide give practically equally sat-

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Temperature	TIME OF DEVELOPMENT				
65° F.	1 Min. 30 Sec	2 Min.	2 Min. 30 Sec.	3 Min.	4 Min.
70° F.	1 Min. 15 Sec.	1 Min. 40 Sec.	2 Min. —	2 Min. 30 Sec.	3 Min. 15 Sec.
75° F.	1 Min. —	1 Min. 20 Sec.	1 Min. 40 Sec.	2 Min. —	2 Min. 40 Sec.
80° F.	— 50 Sec.	1 Min. 5 Sec.	1 Min. 20 Sec.	1 Min. 40 Sec.	2 Min. 10 Sec.
85° F.	— 40 Sec.	— 55 Sec.	1 Min. 5 Sec.	1 Min. 20 Sec.	1 Min. 45 Sec.
90° F.	— 33 Sec.	— 45 Sec.	— 55 Sec.	1 Min. 5 Sec.	1 Min. 25 Sec.

Problems of Controlling Correct Photographic Reproduction

PART 4

by
Dr. Herbert Meyer, A.S.C.
Head of Hollywood Research Bureau,
Agfa, Ansco Corporation

IN DEALING with the subject of color sensitivity of photographic emulsions in relation to visual sensitivity, we have entered the most complex phase of our problem.

At present four types of photographic emulsions are in practical use which are distinguished by different color sensitivity. They are as follows:

(a) Color Blind Emulsion.

To this group belong emulsions which are only responsive to blue, violet and ultra-violet. They are represented in practice by Positive film and Sound Recording film.

(b) Orthochromatic Emulsion.

In addition to the original blue sensitivity, which is an attribute of all Silver Bromide emulsions, this type is sensitive to the yellow-green range of radiation. Its practical application in the 35mm motion picture field is rather limited at present as it is only used for reproduction of dupe negatives.

(c) Panchromatic Emulsion.

This type responds to practically all wave lengths within the visible range of radiation and extends its sensitivity even further towards red and naturally, also, into the ultra-violet range. It is the type generally used for picture negative production.

(d) Infra Red Emulsion.

This type, in addition to the original blue sensitivity of the Silver Bromide, is sensitized for the visible dark red and extends its sensitivity far into the invisible range of Infra Red radiation. It is used in scientific work such as astronomical photography, special effects, particularly artificial night scenes, aerial photography, cloud effects, and especially long distance shots where aerial haze prevents registration on other types of emulsions.

The spectral sensitivity curve of a photographic emulsion is commonly determined by means of a spectrograph. This instrument permits only relative judgment or comparison of color sensitivity, and the results obtained might be of very little practical value.

In practice, the color sensitivity is usually tested by actual reproduction of colored objects in conjunction with the use of light filters.

Referring to the discussion of the relation between color sensitivity of photographic emulsions and visual sensitivity, it might be well to first refresh the mind of the reader with some of the fundamentals and terminology of color.

1. Visibility Curve and Spectral Sensitivity Curve of Photographic Emulsions.

The visibility curve represents the relation between visual sensation and wave length. It is measured in brilliance units which are plotted for all wave lengths creating a visual sensation upon the retina of the eye. The shape and the maximum of this curve changes and shifts to a certain extent with any change of the brightness level or intensity at which the reading of the brilliance units are made. For an average brightness level of a non-selective light source (white light), the maximum brilliance lies at 556 m/u (yellow-green), decreasing rapidly towards longer and shorter wave lengths and becoming only 1% of the maximum value of 430 m/u (violet) and 690 m/u (dark red).

The spectral sensitivity curve of any photographic emulsion differs widely from the white light visibility curve, even when considering the best color corrected type, represented by Panchromatic film. The visibility curve resulting from certain selective light sources such as Mazda light, comes much closer in shape to that of the spectral sensitivity curve of the Panchromatic type, which is one of the reasons why corrective light filters are not in need when photographing indoor sets with Mazda light on Panchromatic film.

2. Visual Sensation.

The total visual sensation can be composed of three factors, brilliance, hue, and saturation.

(a) Brilliance is that attribute of any color which makes it comparable to some member of the series of grays.

(b) Hue is an attribute of certain colors by which they differ characteristically from a gray of the same brilliance, and which permits them to be classed as reddish, yellowish, greenish, or bluish, etc.

(c) Saturation is that attribute of all colors possessing a hue which determines the degree of difference from a gray of the same brilliance.

According to these definitions,* two groups of colors have to be distinguished, one of which represents the non-selective or neutral type and includes all grays between black and white. These colors are hueless and differ from each other only by the brilliance factor.

The other group includes all selective colors, which in addition to being distinguishable by the brilliance factor, create a sensation of hue and saturation. Hue is the qualitative attribute, which distinguishes this color from a non-selective gray of equal brilliance, while saturation is the quantitative attribute expressing the magnitude of the difference between a selective color producing a sensation of hue and a hueless color.

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*(See transactions of the Society of Motion Picture Engineers, Volume 10, No. 27, Page 135, and following pages.)

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An artist's sketch of the placement of clouds in a scene. Clouds to be made synthetically.

Making Clouds To Order Pays

by
Wilton Scott

THE MONEY lost by motion picture troupes forced to "sit down and wait for clouds," if it could ever be totaled, would probably pay the National Debt. The artistic damage caused by attempts to carry on in spite of vacant skies doesn't appear on the cost-sheets, but it, too, would reach an appalling aggregate. And a stenographic report of the comments of all the Directors and Cinematographers who have had to do these things could never go through the mail.

Everybody, in fact, talks about the cloud situation—but nobody ever seems to do anything about it.

That is, until recently. Within the past few months, a world-famous artist and an equally famous Director of Photography, in the course of preparing to film one of M-G-M's most important productions, decided that something would have to be done to ensure the "casting" of properly pictorial clouds in the film. There they were in the illustrator's sketches of the scenes. Less visible, but no less important, they were an integral part of the Cinematographer's visualization of his compositions. Dan Sayre Grosbeck, the illustrator who created the craft of "visualizing" for the screen, and Karl Freund, A.S.C., their heads almost literally in the clouds, have evolved an idea which bids fair to solve the cinema's cloud question.

If nature doesn't supply your clouds, they reasoned, and practical or artistic considerations preclude the possibility of using a conventional matte-shot, the only thing left is to make your own clouds! And that is exactly what they propose to do: combining the Navy's smoke-screen with the Army's smoke-bomb and the sky-writer's trickery to reproduce any natural cloud-formation the weather-bureau could name, in any desired color or combination of colors, "spotted" at exactly the time and place called for by script and production-schedule!

"We were discussing the clouds I had in my sketches," Grosbeck relates, "hoping the weather-man would give us a break when the time came to shoot—though we knew precious well he wouldn't. After we'd expressed ourselves fairly fully, we began to talk about some of the clouds we'd seen and been unable to sketch or photograph. That eventually led us to reminiscences of the fluffy clouds made by bursting shells and signal-bombs during the war—Karl, you know, had seen them from the German side of the lines, while I had admired them between my duties with the Royal British Field Artillery. That in turn reminded me of the time when, in the Siberian Expeditionary force, we used to use fluffy white smoke-bombs to try to entice the Bolshevik artillerists into firing a few rounds so we could spot their battery positions (we hadn't any observation-balloons or planes). I told how I used to sprawl on the hillside and watch their white smoke-puffs billow in the sky. How useful some of those shells would be to make movie clouds!

"We stared at each other—why not? Mortars and shells are still available, and there are plenty of ex-artillerymen to do the shooting! We began to check over the smoke-materials that were available, and how we could use them for cloud-making.

"The Navy's aerial smoke-screen chemicals can be combined to produce clouds that are clean white, yellow, or black. The artillery smoke-bombs come in both white and black. As far as color goes, then, we could duplicate any natural clouds. Next, how about duplicating cloud-formations—and getting them where we wanted them? As far as motion pictures are concerned, the most important cloud-types are the Cumulus and Stratus clouds—the big puffy billowy ones and the long, thin streaks.

"Making Cumulus clouds would be easy, big, low-lying ones, at least. Simply put white smoke-shells into mortars, time them to burst at the right place, and the billowy puff of smoke does the rest.

"For the Stratus clouds, a sky-writing airplane will be

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metal units, fitted together with bolt-fastened clamps, and floored with standardized wooden catwalks. It is unbelievable how quickly a crew can platform a set with this system. There is no sawing or fittting to be done; no nailing. The metal tubes are simply clamped into place—and that's that: the platform is ready to use. It is easy with this system to get the lamprail at exactly the right height for low sets, or to conform to oddly-shaped ones. The same units can be used to make parallels and all sorts of special equipment: they have even built a workable crane out of the tubes when the script called for a boom shot.

The British have one peculiar custom which makes it hard for the laboratories and technical personnel. This is the "Trade Showing." They don't preview their films as we do here, but as soon as the film is completed, they have a Trade Showing in some large theatre, to which the press, exhibitors, and so on are invited. The picture may not be released for six months—but the special-effects staff, the cutters, scorers, re-recorders and especially the laboratory people have to work like mad from the time the last scene is shot until the Trade-Show print is ready.

When I went to England, I found that the laboratory had only the smallest nucleus of a special-effects department, and my task was only a little ahead of starting from scratch. That we are today handling every kind of special-effects work—optical printing, miniatures, matte-shots, and Dunning and projected-background composites—for most of the British studios and for many of the American ones, speaks well for the ability and cooperation of my British co-workers. And all of them are British except myself and Bill Leeds, who came over with me to see to the building and maintenance of our equipment. At the time we arrived, optical printing was almost unknown in Europe, and you can imagine the difficulties experienced by directors and writers who had only direct cuts at their disposal to use as transitions. Today, several excellent optical printer installations, operated either by Americans or by Britishers trained by Americans, furnish almost every optical transition known, though Elstree did not follow Hollywood's example in exaggerating the use of trick optical transitions.

At present, the foreign Cinematographers are pre-eminent in England, though there are a number of excellent English cameramen. In addition to such familiar American Directors of Photog-

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Hollywood, Calif.

raphy as Hal Rosson, A.S.C., Lee Garmes, John W. Boyle, A.S.C., Glenn MacWilliams, A.S.C., Phil Tannura, and the rest of the American contingent, there are quite a number of Germans who for one reason or another have left their homeland during the last few years. In connection with cameramen, the British have a custom which, I think, Hollywood might well copy: they give screen-credit to the Operative Cameraman as well as to the Director of Photography. On their credit-titles, you will see, "Photography by A. So-and-So, Camera, J. Whatzisname." The man credited for "Camera" is the Operative.

I have frequently been asked about the advisability of going to England to work. In my own case and that of others, it has been a good move. In other instances, the results have not been so happy. The British pay well for technical talent, and though taxes and living costs are high, England is a very pleasant place in which to work and to live. But let me strongly advise my Hollywood friends not to come to England on speculation: the government regulations are very strict on this point, and the man who comes other than to fill a definite position has in addition to the problem of finding a job, the certainty that the authorities would not permit him, as a visitor, to take one even if he found one.

Training Makes Triumphs

Continued from page 96

realizes that greatest creative achievements always lie just beyond in the future.

There is encouraging and hopeful indication for the healthy artistic forward days of the cinematographic profession that artist-technicians as exemplified by Charles Lang are being attracted to the fold and are forging to fore-flight ranking.

His professional triumphs are no accidents of circumstance. They are deliberately and ruthlessly planned and moulded on arduous years of study and experience on the firing line. There is eager acceptance of new means and methods; a hand-in-glove quest with the scientists of laboratories for betterments. And, withal, a sound utilization of the sum total of cinematographic approved practice to date.

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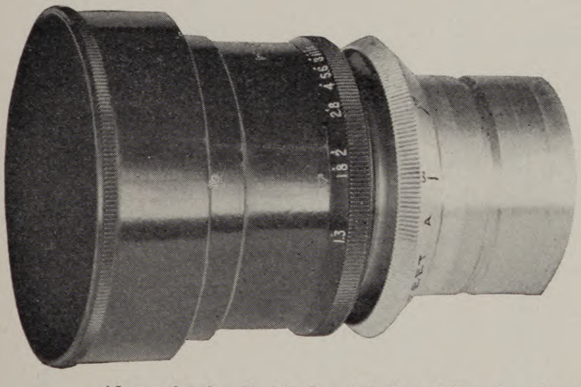

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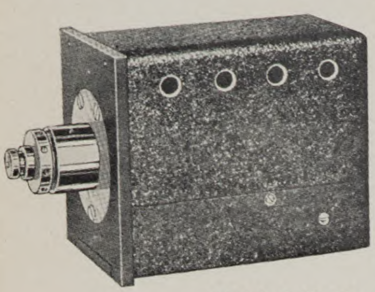

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parted a decade or more back—when a man could merely drift into a camera career. Cinematography as currently performed is a craft that can not be mastered from text-book perusal. There is no substitute for the long, intense apprenticeship period of gaining active experience.

Problems of Controlling Correct Photographic Reproduction

Continued from page 100

4. Absorption, Reflection and Transmission.

Any natural object is visible by virtue of the incident radiation which it transmits or reflects. Any object that transmits or reflects all wave lengths of visible radiation in equal proportion belongs to the group of neutral or non-selectively colored objects, such as gray, white or black, depending solely upon the extent to which they reflect the incident radiation.

All objects which absorb certain wave lengths of the incident radiation to a greater extent than others are selective absorbers. Radiation, which is reflected or transmitted by such objects is different in spectral composition from that which was incident thereon.

The color which an object appears to have depends, therefore, on two factors, its absorbing characteristics and the spectral composition of the incident radiation.

Most of the natural colored objects are of the reflecting type with selective absorption. Consequently, the vast variety of pigments and dyes and their spectral absorption curves are of vital importance to the photographer.

Objects of the transmitting type with selective absorption are best known to the photographer in the form of color filters which are used to selectively absorb or emphasize certain portions of the radiation reflected by the object being photographed.

The absorption curves of pigments are in general characterized by a more or less gradual cut off in comparison to those of transmitting objects, such as color filters, which must show a relatively sharp cut off.

5. Luminosity Curve and Photicity Curve.

The ordinates of the visibility curve as previously explained consist of brilliance units. When multiplying these ordinates with those of the spectral reflection curve for any given selective absorber (such as a pigment for instance), and plotting this product against wave length, the luminosity curve is obtained. The area inclosed by this curve indicates the relative brightness of this object for a given light source.

Similarly when multiplying the ordinates of the spectral sensitivity curve for a photographic emulsion with the ordinates of the spectral reflection curve of any object and plotting this product against wave length, we obtain a curve which is known as the photicity curve.

The area of this curve is proportional to the photographic brightness of the object considered.

These few fundamentals of color should be studied and understood by anyone who concerns himself with the problem of correct photographic reproduction.

The solution of this problem, as was previously stated, consists of rendering brightness and brightness differences or contrast in the final print identical to that conceived by the eye from the natural object.

In practice it will be found that an additional problem of equal importance exists which requires deliberate distortion or a deviation from correct reproduction in order to secure certain desired effects.

Both problems will be discussed further in the following issue.

Rapid Processing Methods

Continued from page 99

isfactory rendering of detail in the extreme shadows, while D-72 gives somewhat less detail in the shadows, and D-8 still less. This is illustrated graphically in Figure 1 which shows the relative appearance of negatives which had been given graded exposures and then developed for the optimum times as shown in Table II. It can be seen that the strips developed in D-82, D-82 with added caustic, and D-9 show from one to two more steps in the extreme shadows than the strips developed in D-8 and D-72. Since each step corresponds to a decrease of approximately 20 per cent in the exposures, this indicates an increase of 25 to 40 per cent in the effective emulsion speed, which is approximately the increase shown in the table.

Rapid Fixing

The rate of fixation as measured by the time required to clear the film of undeveloped silver salts, depends on a number of factors, the most important of which are: hypo concentration, degree of exhaustion of the bath, temperature, and degree of agitation. For low concentrations of hypo the clearing time is decreased as the concentration is increased, reaching a minimum value for Eastman Super-sensitive Panchromatic film at a concentration of about 360 grams per liter of hypo. If the hypo concentration is raised above this value, the clearing time again increases. For rapid work, therefore, extra hypo should be added to the usual fixing bath formula to bring the total hypo concentration to 360 grams per liter (3 pounds per gallon).

When a fixing bath is used, a number of changes occur which tend to increase the clearing time. Therefore, fresh fixing solution should always be used. The temperature of the bath has a considerable effect, higher temperatures giving more rapid fixing but, on prolonged storage at high temperatures, the bath is apt to sulfurize. The F-5 fixing bath can be used up to 75°F., while for processing at much above this temperature, the F-23 chrome alum hardening fixing bath should be used. Thorough agitation of the film in the fixing bath decreases the clearing time considerably as it helps to wash away the dissolved silver salts and supply fresh hypo to the emulsion. Since agitation also helps to prevent the formation of a scum on the emulsion surface, it should not be neglected.

If a still shorter fixing time is desired, an improvement can be obtained by the addition of about 25 grams per liter (3¼ ozs. per gallon) of ammonium chloride. If much more than this quantity is added, the clearing time will be increased, but this quantity gives a decrease, particularly if the hypo concentration happens to be a little low. The addition of ammonium chloride seems to be most effective with a non-hardening bath such as the F-24 with increased hypo but it also has some effect with hardening baths such as the F-5.

For rapid processing, fixation may be considered to be sufficiently complete as soon as the milky appearance has disappeared from the emulsion. The processing is completed by washing the film for 2 minutes in a rapid stream of water and drying with blasts of warm air directed against both sides of the film. The warm air blasts may be most conveniently obtained with small electric hair dryers. To hasten the drying and prevent the formation of water marks on the film, all drops of surface water should be removed by wiping both sides of the film with a piece of absorbent cotton, chamois leather, or viscose sponge which has been thoroughly wetted and then squeezed as dry as possible by hand.

After the prints have been made, the negative should be returned to the fixing both for 5 or 10 minutes, then washed thoroughly and dried in the usual manner, otherwise there will be danger of fading of the image if the negatives are to be kept for any length of time.

(Concluded next month)

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Leica Inventor Passes

Oscar Barnack, inventor and designer of the Leica camera, died on Jan. 16th at Wetzlar, Germany, after being sick several months.

Barnack's invention did much toward popularizing photography among many who otherwise would not have taken up this hobby. The use of motion picture film made this type of photography very popular. The Leica camera was first intended for use in making tests in the studio, but its popularity as a candid camera soon outstripped its original function.

Harry Zech Returns

After spending five months in Great Britain, Harry Zech, A.S.C., has returned to Hollywood.

Zech went to London to do backgrounds and process work for Korda's London Films. Also while there he directed the photography on several independent pictures.

Boyle Now "Sunkist"

John Boyle, A.S.C., who has been in London for these many months, became so sick for California sunshine or something as near to it as he could get, that he took several weeks' leave of absence. He flew out of London on New Year's day; then by rail through Italy, as the Italians will not permit British planes to fly over that country. Back to a plane at Brindisi, Italy, to Athens, Greece; then another plane across the Mediterranean to Alexandria and thence to Cairo, where he claims he found the proper sunshine.

According to his letter he used his Leica freely in Egypt, but was not allowed to use it in Italy while flying.

Boyle met Ariel Varges in Cairo, he having just returned from Abyssinia. Harry Perry was in London.

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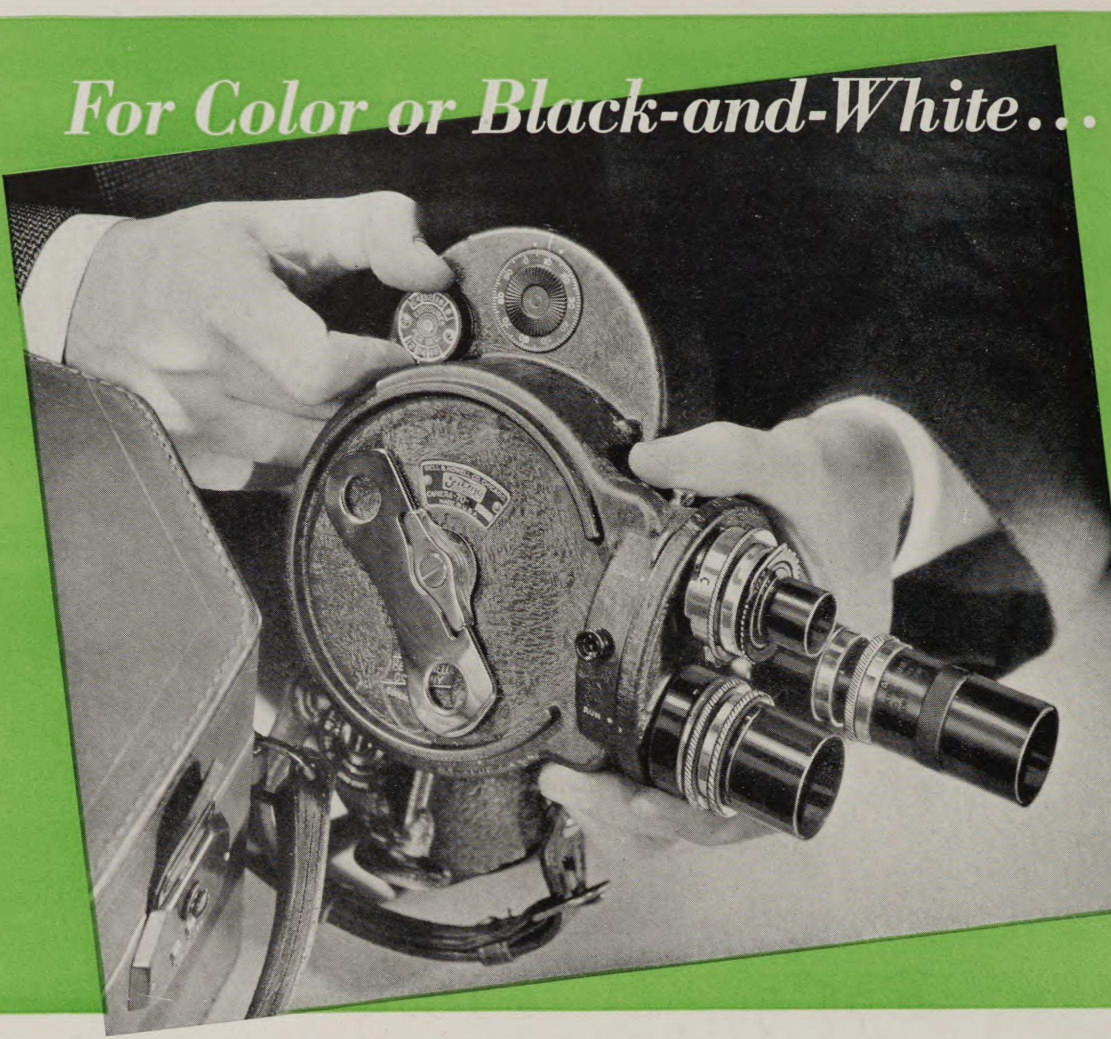

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AMATEUR MOVIES

this issue

- Shooting An 8mm Prize Winner
- Balancing Sea and Sky
- When to Use Double Exposure
- Optical Tricks You Can Do
- Projection Cabinet . . home made

. . . and other features

MARCH,
1936

25c

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AMATEUR MOVIE SECTION

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PROFESSIONAL Criticism of the Amateur picture is a part of the service offered by the AMERICAN CINEMATOGRAPHER. Many are not aware of this. Hundreds of pictures have been reviewed this past year by members of the American Society of Cinematographers for the Amateur.

Next Month . . .

● Next month's amateur section will again be rich in information right from Hollywood headquarters. A.S.C. members and outstanding Amateur Cinematographers will contribute articles.

Balancing Sea and Sky With Filters

by

Arthur Edeson, A.S.C.

QUICK adaptability is the keynote of success in filming seascapes. You can't bind yourself to one hard-and-fast rule of technique, for the combination of filters, lighting and exposure which gives you a perfect shot today, may not work at all under the conditions you'll meet trying to duplicate the shot tomorrow. Besides, in different scenes, you will have different things to show, and have to present them differently.

Essentially, photographing water scenes is a problem in contrast. You have three basic factors in your picture: sea, sky, and your subject, be it a boat or people. The problem is to reproduce them in black and white on the screen in such a way that folks won't have to stop and figure out which is which. A combination of filtering and lighting is the answer: but the exact combination is subject to infinite variation, because the components of your picture are themselves subject to such variation. The water, for instance, can vary from a strong, clear blue through a range of greeny-greys to a dull slate grey. It may reflect relatively little light, an overpowering glare, or (which is worst) a myriad of dancing catch-lights. The sky, too, can range from a clear blue through a baffling range of haze to cloudy grey and a sultry grey-white. It may be "bald-headed" (cloudless), or sprinkled with thin or thick clouds, or entirely overshadowed. Your subject—well, what variations can't it undergo? You may have a long-shot of a white-sailed windjammer or yacht, a dark liner or battleship, a spray-clouded speedboat, or close-ups of people on boats or looking at them. Your technical treatment must be as changeable as a politician to meet all these variations.

We'll start out by assuming that your exposure is going to be correct. With all the accurate exposure-meters now on the market, there's no excuse for anything else. Besides, in marine camerawork, there is so little latitude between correct exposure and overexposure in the brilliant sea and sky, on the one hand, and underexposure in the shaded areas, on the other hand, that exposure has to be abnormally accurate.

Generally speaking, the aim of filtering should be to provide merely a mild correction, and to cut down the excessive glare. Only on rare occasions is it good to use heavy filters, for they darken the water until it looks definitely unnatural. My personal preference is for the 3-N-5 and the 5-N-5, which consist respectively of an Aero 1 filter combined with a .50 neutral density, and an Aero 2 in the same combination. The Aero filter provides for enough mild correction to make the scene reproduce naturally, while the neutral density screen which is added controls the glare. I used these filters very extensively in making "Mutiny on the Bounty." Sometimes, when the sky and sea are a vague "washed out" blue, you may find it wise to use a heavier filter, in order to separate the two. On the other hand, there are hot, hazy days when both sea and sky show little, if any color, and throw back a sultry, white-hot reflection: then a color-filter is often of little use, and a heavy neutral density filter is the thing, for controlling the glare is all anyone can hope to do.

Only when the sky is clouded over, and both sky and sea are a leaden grey is it safe to use the contrast filters (G, 23-A, etc.). These filters always increase contrast, and if filming a clouded seascape, they may at times help to make a subject such as a ship stand out a trifle more clearly against its grey background. But they should be used sparingly!

When there are picturesque clouds in the sky, and your camera is set up on a good, solid foundation such as dry land, you might try a graduated filter to make the clouds stand out more strongly, without overcorrecting the water. This is rather tricky, though, as the upper division of the graduate must be rather heavy to produce the desired result and it is essential (and by no means easy) to get the dividing-line of the filter at a point in the picture where it won't show up unpleasantly. Using such a filter when you are on a boat is, of course, impossible, for as the boat rolls, the dividing-line of the filter—and the change in filter-correction—dances all over the screen.

There is one type of shot where all normal standards of balance and color-rendition can be thrown overboard. This is when you are filming a speedboat in action. The most picturesque thing about a racing motorboat, whether it is a "Miss America" or a tiny outboard-motor racer, is the visual contrast between the water and the mountainous, snowy wake of the boat. Photographically, this calls for heavy filtering, to increase the contrast. A red filter, such as the 23-A, the 25-A or even the 29-F, is the thing. Such a filter overcorrects the water—the heavier ones will make the water photograph almost jet-black—and provides a background against which the wake's white spray stands out impressively.

Lighting is doubly important in marine photography—and all too often almost beyond control. Generally speaking, when you are photographing a ship or boat, you can't control its course; you have to set up your camera and get the best shot possible under the circumstances. Even in "Mutiny on the Bounty" we couldn't shape the manoeuvers of the "Bounty" and the "Pandora" wholly for the camera.

Continued on page 131

Shooting An 8mm Prize Winner

by
Dr. F. R. Loscher*

TO almost every amateur, at some time, comes the desire to make a real production, and that desire reached a climax one night as I read Wallace D. Coburn's book entitled, "Rhymes From a Roundup Camp." A poem from that book called "To An Indian Skull," seemed to have all that could be wanted for such a picture. In my mind I could see the wagon wheels in the dust, and the dreaded Indian attacks, but to dream of them, and to produce them on the 8mm strip were two different things.

The properties available were only three horses, two mules and one wagon. From the river bed we secured willow sticks which shaped very nicely for the bows of the wagon cover. The cover was made from a piece of old canvas which had been used as a tractor cover. Old leather coats, hats and burlap sacks made most of the costumes. The two dresses used had to be switched between our four female characters. The Indian costumes and old flintlock guns were loaned from the collection of Mr. Coburn, a personal friend of mine.

The hardest part of the shooting was to cover up undesirable backgrounds. The angles had to be up or down, and when shooting from under the wagon in the battle scenes the horses' feet raised enough dust to make a screen which blocked out fences and fruit trees.

One of our jobs was to rig up a set to represent the back end of the wagon, with water keg and sacks. In the opening of the battle scenes the keg was pierced by an arrow and showed the water trickling out. This was done by making a hole in the keg and adjusting a small piece of hose next to the arrowhead. This hose siphoned the water from a can above, giving the effect of leaking. The arrow was then held back and allowed to spring forward as the camera went into action. This springing motion cut carefully with the preceding scene gave the effect of an actual hit.

Toward the end of the story, the wagon train leader is shot while trying to secure more water. This called for fast cutting from a dummy being hit to the leader falling forward with an arrow in his back. The wagon train was pictured by showing only one full shot of the wagon in a series of close shots of the mules' feet and wheels rolling along in the dust.

The cutting of this picture was of great importance; many scenes which looked beautiful and which I would like to have saved were cut short to improve the tempo of the picture. Many of the scenes were only two or three inches long and without quick action a drag would have developed. The tempo of the picture was also raised by the use of double and triple exposures, one especially a close-up shot of horses' feet galloping by was carried through a full wind of the camera. This was then cranked back and the image of a pioneer with rifle was lap dissolved with a burning wagon and two girls and a child running by.

Now for a word about the camera and accessories used. The Eastman Model 60 8mm was used. It had been equipped with a wind-back by the Fried Camera Company, which allowed for producing special effects very easily. The Harrison sunshade and fading glass were also used in the lap dissolves. Fades in the picture were produced by the dye method, using a product manufactured by the Dye Research Laboratory of Los Angeles, called Fotofade. This enabled me to put in many fades which had not been calculated at the time of the shooting. Many of our shots were taken almost directly into the sun to secure effects and back lighting, and at times the sun-shade did not give enough protection to the lens, so it was necessary to use some larger shade above the camera.

The reflectors used in the shooting were made of wallboard with tinfoil glued to them, and a wooden frame-work

Continued on page 124

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*Winner of the Grand Prize in the American Cinematographer 1935 Amateur Movie Contest.

The Camera Goes 'Round and 'Round

by
Barry Staley

HERE is a continuity that is decidedly different. It takes you away from accustomed fields of motion picture making for an interesting excursion into realms of endeavor closely approximating those of the professional cinematographer.

It will provide plenty of fun in the shooting and screening, and give you opportunity for your creative genius to have full play.

Camera angles provide one means, and a most simple one, for injecting variety and life to your scenes. For some reason, the average amateur shies away from them. So here's a chance to dive in and see what effective results you can get.

Every community has a children's playground equipped with swings, teeter-boards, a miniature merry-go-round and similar devices for healthy outdoor sport. To this location we go for a little advanced lens activity.

MAIN TITLE: THE CAMERA GOES 'ROUND AND 'ROUND.

SCENE 1: MEDIUM SHOT of your car arriving at the playground. It stops and the family's assortment of children pile out, running eagerly toward the swings.

SCENE 2: LONG SHOT of the playground showing the various devices. The children run in.

SCENE 3: MEDIUM SHOT of a swing. The children run in happily and scramble for the first chance. Junior wriggles up into the seat.

SCENE 4: CLOSE SHOT of Junior in the swing. He moves forward and out of the camera as Sister, pushing from behind, comes into view.

SCENE 5: CLOSE SHOT, from a low set-up shooting up and parallel with the swing's line of flight; your focus is on Junior at the bottom of the swing. Junior, swinging back from his first upward push. He suddenly comes into view, his face in full focus and disappears as he swings away.

SCENE 6: CLOSE SHOT from a reasonably low set-up; your focus is on Junior at the top of his backward swing. He swings back and is clearly seen during that instant before the swing comes forward.

SCENE 7: MEDIUM SHOT. Borrow a high step-ladder from one of the park attendants. From this high angle PAN to follow Junior's sweeping swing forward.

SCENE 8: CLOSE SHOT. Put the ladder directly in front of the swing. Camera is focused on Junior's position at the top of his forward arc. Suddenly he swings up and into sharp focus, fading hazily as he swings back.

SCENE 9: CLOSE SHOT. The same set-up as Scene 8. Change your shutter speed to 64 frames per second. When screened, Junior will languidly float through the air (with the greatest of ease), mysteriously hang suspended before your camera and lazily drift back.

SCENE 10: MEDIUM SHOT from the ground directly under Junior's highest forward point. Shoot up at him and PAN to follow the complete arc of his backward swing.

SCENE 11: MEDIUM SHOT, to be cut into Scene 11. Get in the swing yourself. Get your elbows locked around the ropes, leaving your hands free, camera leveled straight ahead. Get a husky shove from the youngsters and swing as high as you can. From the top of your backward swing, start the camera. Let it run through a full swing forward and backward. You'll get the ground, horizon and sky just as it looks to a swinger. When screened, you are taking your audience for a ride in that swing.

SCENE 12: MEDIUM SHOT. At the slide. Catch the children running in to the slide, climbing up the ladder and one after the other sliding down to the sand pit at the bottom.

SCENE 13: CLOSE SHOT. From the side of the slide, shooting up. One by one the children flash into view and disappear down the slide.

SCENE 14: MEDIUM SHOT from top of slide shooting down, following Junior's speedy descent and deposit in the sand pile.

SCENE 15: MEDIUM SHOT to be cut into Scene 14. Get in the slide yourself, camera shooting straight down the slide. Keep it turning as you slide down the chute. And don't stop it when you hit the sand pile, even though you turn over. The effect on the screen will be startling.

SCENE 16: CLOSE SHOT from the bottom of the slide, shooting up its length. Junior comes sliding down and directly into the camera. You can get the effect of his coming right off of the screen and into your lap.

SCENE 17: MEDIUM SHOT of the teeter board or seesaw. The children come running in and climb on, teetering merrily.

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Montage and Symbolism Are Entirely Different

by
Max Liszt*

SINCE the publication of my article on 'Montage'' in the January, 1936, issue, I have been requested by several to go more into detail regarding the application of ''Montage'' and cite other examples.

In trying to do this in the following article, I must bring in ''Symbolism.'' ''Montage'' and ''Symbolism'' are two entirely different and separate subjects, even though at times they touch each other and seem to impersonate one another.

In ''Symbolism'' we symbolize a certain situation or person by the use of an entirely different object; but in ''montage'' we depend upon the composition of meaningless strips of films to bring over a ''suggested'' idea. At times these two will touch and, may be, overlap so that a dividing line is hard to draw.

Such a situation appears in Charlie Chaplin's picture, ''Modern Times,'' and well in the opening sequence of this picture. Here we have a shot of sheep, immediately followed by a shot of many people walking. This could be, at first glance, called ''Symbolism''; but by further analyzing we also get ''Montage'' inasmuch as we could tear these two strips of film apart and project them separately whereby each one would be meaningless as to ''suggested'' idea, but when connected and projected in composition they convey to the audience the ''suggested'' idea that the people in shot number 2 were ''meek as a lamb'' and therefore is ''Montage,'' because the definition of ''Montage'' tells us that:

'' 'Montage' is a composition of strips of film, which in their combination and arrangement to one another convey to the audience a (suggested) idea or emotion; but lack this ability when torn apart and projected separately.''

Immediately we see where this particular situation has an overlapping of ''Symbolism'' and ''Montage'' and the dividing line is hard to draw.

The ''Montage'' idea of ''meek as a lamb'' becomes more and more apparent to the audience as the film unfolds, and is brought home most forcibly to the spectator at the moment that the factory worker (Charlie Chaplin) rebels against the existing system while the others remain ''meek.''

To cite an example of ''Montage'' in its purest form I like to draw on one of my pictures. In this particular instance the situation was as follows: An old and shabbily dressed man is seen sitting on a bench, smoking a cigaretstub which he had picked up from the street. At this moment in the story it was advisable and necessary to tell something of the man's past so as to clarify more significantly developments in the man's behavior later on in the picture. Only a few feet could be used so as not to halt the flow of the present-story development; but in these few feet the idea had to be brought over that the man had been well off but had lost everything.

By applying ''Montage'' this was done as follows:

(1) Close-up of man on bench.
(2) Long-shot of a hotel.
(3) Long-shot of the ''Bank of America.''
(4) Long-shot of a neon sign reading, ''security.''
(5) Close-up of a sewer.
(6) Shot of man on bench.

In this particular story it had been previously established that the man was an old actor and therefore a hotel (''home'' to an actor) was chosen in number 2. Number 3 is synonymic for money; 4 and 5 speak for themselves. Each and every one of these shots do not mean a thing and most certainly do not convey any ''suggested'' idea or emotion when projected separately. But by grouping them in the manner as outlined above, preceded and closed by a shot of the man on the bench the ''suggested'' idea that the man had been well off once was conveyed to the audience in a few feet.

In ''Montage'' it is of the utmost necessity that the idea or emotion that is brought over to the audience is a ''suggested'' one. If it is not suggested the combination of the strips of film is not ''Montage.'' By this is meant that the idea must not be received from any one of the strips of films in itself.

For example: Shot of a winding road, followed by a shot of a man sitting on the grass, his shoes off and rubbing his feet. This is not ''Montage'' inasmuch as we get the idea that the man has walked a far distance (come a far distance) by the very fact that he is seen with his shoes off and rubbing his feet, because if we omit the shot of the road and project the second shot separately we still get the idea that he has walked a long time, and therefore this is not ''Montage.''

''Montage'' would be the following: Shot of a winding road, followed by a shot of a man smoking a cigarette, because neither one of the shots in themselves shows that the man had come a long ways; and by reversing these shots, first the man and then the road, we are able to reverse the ''suggested'' idea of the man having come a long ways to the ''suggested'' idea of the man having to go a long ways.

This example brings us up to the all important fact that in ''Montage'' the succession and placing of the various meaningless shots is of the utmost importance and requires careful consideration as a misplacing of any one shot either will destroy the ''Montage'' idea entirely or convey an entirely different ''Montage'' idea than what is demanded.

The reason that ''Montage'' is so little understood in Hollywood can be blamed on the abundance of money that is a Hollywood's disposal. On account of this abundance of money the directors of Hollywood pictures are depending on sets and the actions of the actors in the scene to bring over the idea, and have never had to rely on their own ingenuity and ability of story-telling with the camera.

If Hollywood did not have this abundance of money, its directors would develop and understand ''Montage'' inasmuch as ''Montage'' is an inexpensive but highly effective and powerful method in bringing a point in the story home to the audience.

This is one case where abundance of money is a drawback to the development of motion pictures as a medium of entertainment and education.

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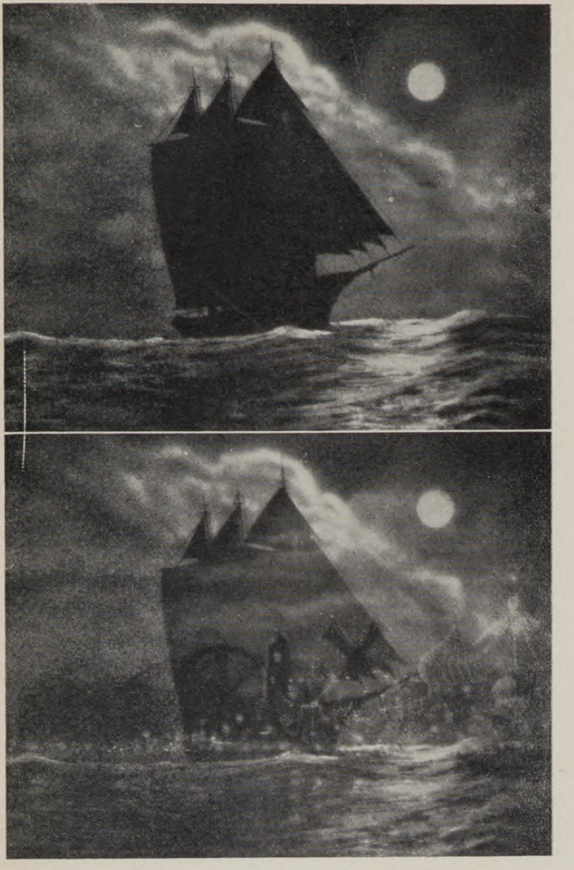
*Guest-instructor in ''direction and story-construction'' at the ''New Film Group.''



A simple double exposure. Above, first exposure of ship. Below, second exposure—a shore scene—added.

When to Use Double-Exposures

Re-written for Aug '50 a/c

by

Walter Blanchard

DOUBLE-EXPOSURE can be more than a cinematic trick; it can enable us to tell things which could not so effectively be told in routine scenes. Double-exposed scenes are naturally harder to make, but they are often valuable footage-savers.

Reduced to the most elementary terms, multiple exposure consists simply of photographing a scene, stopping the camera and winding the film back to the starting-point, and then exposing on some other action which we want to see superimposed upon the first shot; the result may be an obviously twice-exposed scene, or an apparently normal picture in which the same person appears twice, according to the methods we use.

Double-exposure work is naturally easiest in a camera which permits winding the film backwards. The Cine-Kodak Special is one of these outfits, also the late Victor Model 5. With these cameras, all that is necessary is to keep accurate note of the footage-meter's reading at the start of your No. 1 take. When the camera stops, slip the lens-cap onto the lens, and wind the film back until you have rewound the proper footage. All there is left to do is to remove the lens-cap and make your second exposure, making sure, of course, that the two scenes end together.

If your camera won't wind back the film, you can still make double-exposures, but you will need either a darkroom or a changing-bag. Before you make your first exposure, slip the camera into the changing-bag and make a little notch in the edge of the film (not too big!) at some definite point; I would suggest notching either just above or just below the aperture-plate, so that any variation in the size of the film-loops will not make your matching inaccurate. Then shoot Take 1 in the usual way, again keeping careful note of the length of the scene. Then—back to the changing-bag. It isn't hard to re-wind the film back to the original starting-point, for you will have the notch cut in the edge of the film to tell you when that point is reached. Re-thread the camera (still in the dark) with the notch in its original position—and you are ready for Take 2. Once you've got the hang of it, you can make triple, quadruple and even more multiple exposures surprisingly easy. But—one word of warning: if you use this film-notching method, be sure to always have your notched starting-point at the same place in relation to the aperture!

So much for simple superimposed effects. Suppose you want to get what the professional calls a "split-screen" effect, in which the background is normal, and the double-exposure consists in having the same person appear twice in an apparently normal shot? This calls for the use of a matte which will cover up one side of the frame, so that you expose only half the picture at each take. The place for such a matte is right in front of the film, as close as is possible without actually scratching the emulsion. The Cine-Kodak Special has a matte slot into which the thin metal masks can be slipped; but with other cameras, you've got to improvise your own mattes. You might think that by simply covering up half of the lens, you would get the matted-off effect you want; but this is not the case, for covering half the lens will only cut down the amount of light reaching the film, without in the least obscuring the picture. To actually block off part of the frame, you must use a matte in the aperture. If you plan to do a great deal of split-screen work, it may be worthwhile to take your camera to a really good cinecamera-mechanic, and have a regular professional matte slot cut into the case; but for most ordinary purposes, simpler and less expensive methods can be improvised. In some cameras, like the Filmo, you can easily fit a little round plug into the circular hole between the shutter and aperture, and either cut the matte in the plug, or by making the plug tubular, with a retaining collar screwed into it, fit interchangeable mattes made of small discs of thin, dark metal, cut to the desired shape. In some cameras, this hole in front of the aperture is threaded, so your matte-holder can be threaded to screw into it, assuring a light-proof joint; in other types, a fairly snug-fitting holder of soft rubber might be better. In the Model B Cine-Kodak, the front aperture-plate is removable, so you can fit your mattes directly onto the aperture-plate, making them of opaque tape, or of thin, blackened shim-metal, held in place with scotch tape.

In any event, two mattes are needed: one to cut off the

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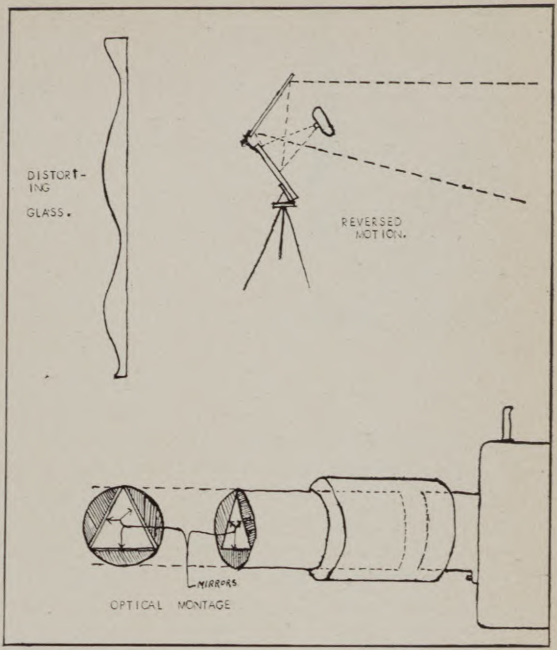
Optical Tricks You Can Do

by
Jerome H. Ash, A.S.C.



DID YOU ever see a close-up of a person, with a number of smaller reproductions of the close-up revolving around the edge of the picture? It sounds like a terribly intricate trick: but actually it can be done very easily, in any 16mm. or 8mm. camera, with the aid of a simple gadget that anyone can build for little or no expense.

The device works on the principle of the kaleidoscopes we used to play with when we were children. With it, we can get a picture in which the center, which gives us the normal shot of our subject, is triangular, five, six, or eight sided, and with a corresponding multiplicity of smaller images of the subject either standing still around the center, or revolving around it.

The first thing to get is a cardboard tube about the size of the front of your lens. The cardboard core from a roll of toilet-paper will do excellently, or if you want to be esthetic, a cardboard mailing-tube. The tube should be four or five inches long—just how long will depend on the focal length, angle, etc., of your lens.

Next, get some strips of the thin strip-mirrors used in making ornamental flowerpots, furniture, and the like. These should be the same length as your tube; the width will depend on the size of the tube, and the number of sides you want your central image to have. If you want to start out simply, choose a triangle, and get three mirror-strips, just wide enough so that the three will fit snugly into the inside of your tube. Pack the rest of the tube with plastic wood, gesso, or the like, and fasten the mirrors into place. Then make up a little cardboard collar which will slip over your lens-barrel at one end, and over your tube at the other. The collar should overlap the tube considerably, so your kaleidoscope will be well supported: it should not, however, be so snug a fit that the tube can't revolve easily.

That's really all there is to it. Of course, if you are one of those home-workshop fans, you can turn the tube and collar out of wood, metal or bakelite, and make it a lot better looking; but the cardboard one will do the trick quite as well, and cheaper.

Using the device is simple. You simply slip it onto your lens, and there you are! In shooting, for instance, a close-up (the trick is usually most effective with close-ups) the actual center of your picture is photographed in the normal way, and you get a normal close-up. The edges of the frame, though, pick up the various reflections and re-reflections of the subject in the little mirrors, so if you use three mirrors, you will have a triangular center, with about 18 smaller images of the same thing ringing around it. Naturally, these won't be as well-exposed as the direct image—the re-reflections will be darker than the reflections—but if your exposure is good, they will all show up interestingly.

If you want the outer images to revolve around the center, simply revolve the tube. I've found a very handy way to revolve the tube smoothly is by wrapping a bit of string around it, and pulling on the string.

If your camera is one which, like the Cine Kodak Special, permits you to wind backward, and to use mattes for double-exposure work, you can get some added effects by working out a pair of mattes which will permit you to use the center image for one exposure, and the reflected images for the other exposure. That way you could, for instance, show a close-up of a young man in love, obviously thinking of his sweetheart, who is seen in a dozen or more smaller images, revolving bewilderingly around his head. The more mirrors you use, the more of the smaller reflections you'll get.

Another interesting optical trick is done by the aid of a small piece of clear, flat glass, which you have had ground by a glass-shop so that one side, instead of being flat, is rippled. The ripples can be large or small; large ones, I think, give the most interesting effect. The glass itself needn't be large; I'd suggest making it about the size of one of Harrison's fading-glasses, so that it can be used in a Harrison sunshade. As the curved parts of the glass come in front of the lens, you'll get all the effects of an amusement-park distorting mirror. You can use it stationary, or (and this is best) you can slowly slide it past the lens, either up and down or across. The entire picture will undulate and distort itself, stretching and shrinking. I've used this gadget a number of times to give an earthquake effect.

Here's a trick I used in making "The King of Jazz." Two of the leading players were the "Sisters G," a celebrated dancing team of two beautiful girls, as alike as twins. One of their sequences we introduced with a close-up of the girls, showing only their heads—but the heads were multiplied by two—two heads being upright, the other two inverted.

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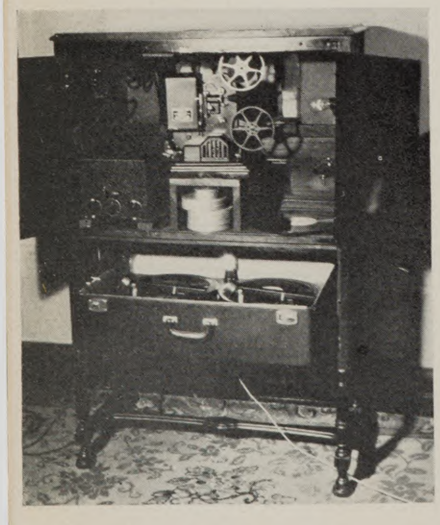
A HANDY GADGET

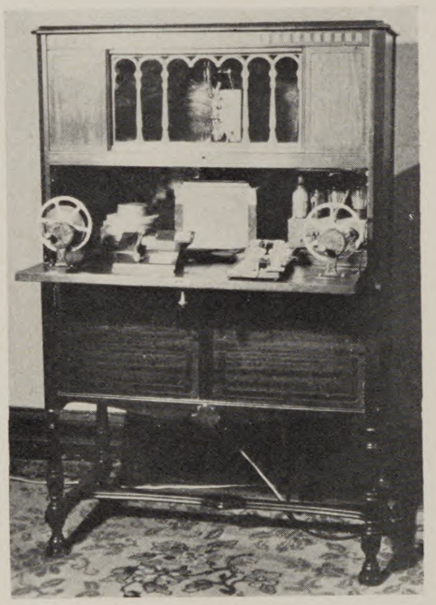
Recently, I built a dual turntable outfit to add to the enjoyment of my hobby, movie making. After trying my films out with music and sound effects, I found I had several problems on my hands. Number one, was to find a way to quiet my projector. The noise of it was distracting from the music. The other problem was to either move to a larger apartment or find some way of condensing my movie paraphernalia. What with one table for my turntables, amplifier, and stack of records, another for my projector and reels, it was getting so that there was no room left for guests. The enclosed pictures show you how I solved my problems.

The combination projection, editing, and sound cabinet originally housed an Atwater Kent Battery Radio Set, and was purchased from a used furniture dealer for the sum of one dollar. The cloth back of the speaker grill was removed and replaced by a sheet of thin plate glass.

A small platform was built to bring the projector lens up to the window. A board, the same dimensions as the top of the platform, bolted loosely in the middle to the platform, allows the projector to be turned around to be threaded. I cut a hole in the top of the cabinet just above the lamp house. This allows the warm air to shoot out into the room. A hole just above the turntable section of the cabinet makes an inlet for the cool air. When running the projector for three or four hours continuously, I usually, as an added precaution to prevent the film from drying out, place a small bowl of water with a sponge in it inside the cabinet.



The cabinet is wired with four electrical outlets. This takes care of everything including a neon lamp which I use as a pilot light for threading and changing reels. The back of the cabinet was covered with a three-ply board. This I cut in half, attached hinges, and made doors out of it. In operation, everything works like a well oiled machine. The reels for the evening's show, are kept inside the cabinet. The records, in the order that I want them, are stacked on top of the cabinet, so you see there is a place for everything, and starting the projector, I close the doors and shut out ninety per cent of the noise. I am now free to give my undivided attention to the musical end of the program. The amplifier controls in the cabinet are turned up so that I need never bother with them. All fading in and out, etc., I do with the pick-up arm controls.



When the show is over, I rewind all reels, put the lid on turntable case, push the cabinet back against the wall, and there I have a piece of furniture instead of a lot of cases lying around.

When you want to do your splicing and editing, pull up a chair, pull down the drop panel, and you are all set to go.

To me, living in a small apartment, this thing is a boon. From the pictures, you will see that it is a Model 60, 8mm projector, but this idea could just as easily apply to a 16mm machine.

Very attractive radio cabinets can be bought for two or three dollars, but you must go to storage warehouses or used furniture dealers to get the old battery-set cabinets, as they are the only ones long enough to accommodate two phonograph motor systems. I am sure that there are very few cities in the country where you can't pick up cabinets for a mere song.

—ARCHIBALD MACGREGOR.

HERE'S HOW

by A. S. C. Members

"I have tried making a shot of my wife sitting in front of a mirror, showing her in the foreground, and a front-view of her face reflected in the mirror. But I can't get a good focus. What should I do?

—L. A., Kansas City.

In photographing reflections in mirrors, most amateurs make the mistake of focusing on the mirror itself, rather than on the object reflected. That is, if your mirror is five feet from the lens, and the subject three feet from the mirror, your focus is not the five feet to the mirror, but the distance from lens to mirror to subject—in this case, five feet plus three feet, or eight feet.

Where the difference between your foreground, which you want in focus, and the subject reflected in the mirror, is too great to be accommodated normally, split the difference in focusing your lens, and stop down as much as possible, to increase the depth of focus.

When you are working close to a mirror, you will sometimes be troubled with a double reflection, one image from the silvered rear surface, the other from the front of the glass. Again, stop down and split the focus. The same procedure is sometimes necessary when using a pane of plate-glass for reflecting, as suggested in an article the writer recently contributed to this magazine.

—Jerome H. Ash, A.S.C.

"What is the best way of making wipes with my Cine-Kodak Special?"

—W. B., Beverly Hills.

Probably the best way of making wipes with the "Special" is to use a mechanical wipe device, like the Du-Morr. Several articles have also appeared in these pages telling how to make such a gadget yourself. The principle is simple: just gear a forward-extending shaft to the hand-crank of your camera (Meccano gears will do quite well for this), and fit some form of slip-clutch so you can throw the device in and out of gear. The wiping blade will fit onto the forward end of the shaft, and when you slip the clutch in, the blade will travel into the scene. The blade should be reversible, so that you can make double-exposed wipes, wiping one scene off with the other.

If you don't want to do this, the best thing to assure even wipes is to fit a framework onto the front of your camera so that the wipe-blade will be several inches in front of the lens, and give a good clean line. Have the support for the blade calibrated, and time your wipe by counts. If you start with your wiping blade clear out of the picture at "one," and finish with it obscuring the picture at the count of "ten," clearly at "five" the blade should always be half-way through its travel. A little practice will enable you to make well-timed wipes by hand this way; but a mechanical device is always better.

—Vernon Walker, A.S.C.

"My interior scenes are well-exposed, but they look awfully flat. What's the matter."

—I. C., Brooklyn, N.Y.

From your description, it seems that your scenes are flat because you have used a perfectly flat lighting, the same on both sides. The remedy is simple: use a little more light on one side than on the other. You can do this either by using two lamps on one side, and one on the other, or by putting one lamp nearer the subject than the other.

—L. Guy Wilky, A.S.C.

"Can I have duplicates made of my Kodachrome pictures?"

—B. B. S., Savannah, Ga.

It is not possible as yet to get color duplicates of Kodachrome film, though in time such a service may be available. Several laboratories are understood to be making black-and-white duplicates from Kodachrome with excellent results: but it must be understood that these dupes are in black-and-white, not in color.

—Charles G. Clarke, A.S.C.

"Which of the 8mm cameras is the best for stop-motion animation work? Is any 8mm camera fitted with a single-frame movement?"

—W. D., New York.

We can hardly recommend any specific product in these pages; but all of the "8's" are excellent cameras. We do not believe that any of the regular 8mm outfits has a built-in single-frame movement, but a single-frame control can readily be added to almost all of them. The manufacturer of the camera you choose could probably fit such a device for you on special order; and at least one electrically-controlled single-frame device is commercially available.

—Wm. Stull, A.S.C.

"I had a Filmo 75 for many years, but recently acquired a Filmo 70. All of the films I have made with the new camera are badly overexposed. What is the reason?"

—J. W. C., Portland, Ore.

The Filmo 75 has a shutter-aperature of approximately 135°, while the Filmo 70 has a much larger opening—216°. So while you were probably using the same lens-settings you customarily used with your earlier camera, the shutter of the new camera was letting in a lot more light. Figuring it out as a matter of exposure-time, the 135° shutter gave you an exposure of about 1/42 second, while the 216° shutter gives 1/24 second. This is quite enough to account for your trouble. The remedy, of course, is to stop your lens down to a smaller opening, reducing the amount of light reaching the film.

—Jackson J. Rose, A.S.C.

"I have a screen three feet wide, but in my living-room, where I most frequently project my films, I haven't room enough to get the projector far enouah from the screen so as to fill the screen. I have about 12 feet to work in, and the biggest picture I can get is less than 27 inches wide. How can I fill my screen without moving into a new house?"

—E. Y. J., Pittsburgh, Pa.

Evidently you have a 2" lens on your projector. To enlarge a 16mm frame large enough to fill your three-foot screen with this lens, you would have to have the projector nearly 16 feet from the screen. However, by using a projection lens of a shorter focal length, you can get a larger image. If you get a 1" lens, you can comfortably fill your screen with an eight-foot throw; if you get a 1½" lens, you can get the three-foot picture with a throw a few inches shorter than your present twelve feet.

If you don't feel in a position to purchase a new lens immediately, you can probably fill your screen by using a mirror. Set the projector up at right angles to the direction in which you really want to project, and use a good mirror to bend the light around the corner of the screen. Using a mirror less than a foot wide, you can add the necessary four feet to your projection throw by projecting four feet across the room to the mirror, and then twelve feet down the room to the screen. When using this trick, you must of course

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Films I Have Used

by
Elmer G. Dyer, A.S.C.

DID YOU ever sit back and think about the films we used to use (and be darned glad to get!) just a few years ago? Orthochromatic emulsions, not much faster than today's positive, and hardly more color-sensitive—badly perforated—unevenly coated—incredibly contrasty—and as grainy as a flour-mill. There were no factory experts on hand to help us with our troubles, and when anything went wrong with the film it was just too bad, for the manufacturers were usually far too impressed with the importance of their product to admit a mistake.

It doesn't take much stretching of the memory to recall the days when there was just one kind of film (two, if you counted positive), and you had to shoot your scene on that one emulsion. Today, you've got about a dozen different types to choose from: Ortho, regular pan, superpan, Super-X, fine-grain background pan, Infra-red sensitive pan, reversal background pan, variable-density recording stock, variable-area recording stock, duplicating stock, bipack red-ortho, and at least half-a-dozen varieties of positive, clear and tinted. And if you can't suit yourself from one manufacturer's stock, just step next door and try his competitor's assortment. If Eastman doesn't make what you want, DuPont or Agfa may—and if none of them do, they will probably be glad to make it for you!

Most of us are so accustomed to regard film as a matter-of-fact incident in our work that we never think of the amazing way the raw film industry has grown up about us. At the turn of the century, Eastman and Lumiere were about the only manufacturers of motion picture film. Their first commercial product wasn't even orthochromatic, and the rolls were about 50 feet in length. In 1901, all the film-factories in the world produced but 29,000 feet of negative film per week; by 1930, with probably fewer firms making film, negative production was approximately 65,000,000 feet per week. Or, to put it in more easily understood figures, the factories were turning out 156,000 miles of film every week. You'd think that this tremendous production would keep two or three dozen factories busy, wouldn't you? Actually, most of this footage comes from three main factories—Eastman, Agfa-Ansco, and DuPont, with negligible amounts dribbling from a few smaller makers like Gevaert in Belgium and Zeiss and Perutz in Germany.

On the other hand, any list of the old-time film-brands would include Eastman, Ansco and Bay State here in America, Lumiere and Pathe in France, Ensign in England, Cappelli in Italy, Gevaert in Belgium, and Agfa, Goertz and Perutz in Germany—a total of thirteen. For once, 13 proved an unlucky number, for see how they've shrunk: DuPont and Pathe have joined forces, and Agfa and Ansco; Perutz seems to be restricted to Leica film, Gevaert is rarely heard from—and the rest have (as far as cinema film is concerned) vanished completely.

And how different was buying film in the old days! Of course, my recollections don't go quite back to the days of the Patents Company, when a film-buyer had either to show a licensed camera or bootleg his film: but I can recall the time when J. E. Brulatour, whose name is synonymous now with Eastman Film, was the American agent for Lumiere film! In those days, and for many years after, buying film was quite a formal affair. You went down to Brulatour's office, and placed your order with Perry Conner (who took your money at the same time). Then Perry would send back to the factory for your roll of film, which—in due and deliberate time—would be manufactured and shipped out to him, and in turn delivered to you! The process was the same whether you were (like me) a struggling free-lance cameraman who wanted 200 feet of film, or a big studio which wanted 200,000 feet. I think it was Frederick L. Kley who, as manager of the Lasky Studio, finally convinced the Brulatour organization that there might be some advantage in keeping a few feet of film in stock here in Hollywood.

One of my more embarrassing moments came a number of years ago when I was on location in Northern California, shooting an extra camera on a big picture. After an especially important day's work, I received an explosive telegram from the laboratory because I had apparently been fading out at about fifty-foot intervals, and fading in five or ten feet later. Usually, the fades seemed to come right in the middle of the scenes! Now I knew I hadn't been playing with the dissolver, and I was just as sure that the camera itself was in first-class condition. Just the same, I was in the dog-house for a long time—until someone discovered that in the particular batch of film my roll had come from, the emulsion was only partially coated, disappearing completely at fifty-foot intervals!

Perforations gave us a lot of trouble, for there were a number of different standards—square, round, and something resembling our present rectangular hole with rounded ends. If you got film perforated wrongly for your camera, you were just out of luck! Most of the studios used to buy their film unperforated, and perforate it themselves. The Biograph people went even a step farther than that: their old Biograph camera took unperforated film, and perforated it as it made the picture!

And speaking of perforations, framing was another fruitful source of grief: some cameras had the frame lines fall between the perforations, like our present standard, while others had the frame line even with the sprockets. Another incident related is that when the first Lasky picture—the original version of "The Squaw Man" was finished, it was suddenly discovered that Cameraman Gandolfi had used two cameras, each with a different frame-

Continued on page 128

WINNERS

GRAND PRIZE: $250.00 Cash . Dr. F. R. Loscher, Los Angeles, Calif., for his 8mm picture, "Red Cloud Rides Again."

1935 Honors

Again

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Dr. F. R. Loscher of Los Angeles won the Grand Prize in the 1935 American Cinematographer Amateur Movie Contest with his Ciné-Kodak Eight, Model 60.

Mr. T. Okamoto of Japan won first prize for Photography with his Ciné-Kodak Eight, Model 20 . . . the same camera with which he won this same prize in the 1934 contest.

..and both used Ciné-Kodak Eight Film

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Wheels of Industry

New Film Splicer

● A new Bell & Howell Film Splicer for 16mm silent, 16mm sound, and 8mm film is announced.

As with the Laboratory Splicer, each film end is located on pilot pins once only. After each film end has been placed between its pair of clamp plates, the emulsion is removed from the left film end with a dry scraper. Then cement is applied, and the right clamp plates are immediately lowered, shearing both film ends and bringing the bonding areas together in a single operation. A lock maintains the pressure until the splice has set—a matter of seconds.

The new splicer, known as Model 136, makes the exclusive B&H diagonal splice. Its pilot pins engage perforations on one side of the film only, so that 16mm sound film and 8mm film are handled as easily as 16mm silent film.

Model 136 has a cast metal base designed to take, as Add-a-Unit equipment features, a B&H Direct Viewer, or a two-way Rewinder, or both, in the same way as the previous amateur splicer. The Direct Viewer, equipped with a light, lens, and ground glass translucent screen, magnifies the film images for the operator's convenience in finding cutting places. Rewinder units are available in either 400- or 1600-foot reel capacity.

B&H Safety Film Cement for Splicer 136 is supplied in a new, improved bottle. The small neck of this bottle reduces evaporation. The brush is attached to a screw cap which gives positive sealing.

Sound Film

● Two new single-reel 16mm sound films of the South Seas, photographed and narrated by Arthur C. Pillsbury, are offered by the Bell & Howell Filmosound Library.

"Life in the South Seas," a trip to the Samoan Islands, shows in detail the life of these happy-go-lucky wards of Uncle Sam, and presents time-lapse photography of the development of the cocoanut plant and the uses to which it is put. The building of the South Sea Islands by two widely different methods, coral and volcano, is portrayed.

"Life Under the South Seas," the second film, shows undersea diving with water-tight motion picture equipment and the photographic results; time-lapse pictures of starfish, anemones, barnacles, hydroids, jellyfish, sea pens, sea urchins, and many kinds of fish.

Leica Exhibit on Tour

● The Second International Leica Exhibit is now on a tour of some of the principal cities in the East. This collection of outstanding Leica pictures includes prints by famous professionals as well as amateurs. The range of subjects treated and covered includes an almost unbelievable variety of photographic activities. Candid, news, clinical, scientific, color, aerial, pictorial, portrait, surgical—are just a few of the many uses to which the Leica serves, as shown in this exhibit.

In connection with the Second International Leica Exhibit, a local Leica contest is held in each city. Local Leicaites are invited to submit their best prints in competition for merchandise awards and prizes. The itinerary of the Second International Leica Exhibit is herewith given, and interested readers should secure complete details from their local photo dealers who will be in possession of the final details by the time this appears.

Cleveland, Ohio—Mar. 3rd to and including Mar. 7th Higbee Co.—Lounge Room.

Detroit, Mich.—Mar. 10th to and including Mar. 15th.

Chicago, Ill.—Mar. 18th to and including Mar. 24th. Blackstone Hotel.

Milwaukee, Wis.—Mar. 27th to and including Mar. 30th.

Minneapolis-St. Paul, Minn.—Apr. 2nd to and including Apr. 6th.

St. Louis, Mo.—Apr. 9th to and including Apr. 14th. St. Louis Public Library.

Indianapolis, Ind.—Apr. 16th to and including Apr. 19th.

Cincinnati, O.—Apr. 22nd to and including Apr. 25th. Netherland Plaza—North Exhibit Hall.

Columbus, O.—April 28th to and including May 1st.

Pittsburgh, Pa.—May 4th to and including May 9th. William Penn Hotel.

Baltimore, Md.—May 12th to and including May 16th.

Washington, D. C.—May 19th to and including May 23rd.

Philadelphia, Pa.—May 26th to and including June 3rd. Boyer Galleries—Broad St. Station.

16mm Film Sources

● Victor Animatograph Corporation has issued their Fifth Revised Edition of the Victor Directory of 16mm Film Sources.

This is the most complete and comprehensive work of this kind that we know of. It is the effort of the publishers of this book to list all known sources of 16mm silent and sound films. It is claimed that practically the only sources not included are those that refused permission to list them in the Directory in spite of the fact that these listings are free of charge and entirely without obligation.

This Directory is indexed and made as comprehensive and easy to use as it is possible to make a directory. It will be sent by Victor Animatograph Company, free of charge, to present and prospective owners of 16mm equipment requesting it. Distribution is from the Advertising Department of the Victor Animatograph Corp., Davenport, Ia. Free distribution is limited to one copy per person. If additional copies are desired, they will be supplied at 50c each.

Soft Focus Lens

● According to an announcement from Burleigh Brooks, he has placed on the market a Rolleiflex lens accessory known as the Duto Folleiflex Soft-Focus Lens. From the description it appears that it is only necessary to place this over the regular lens, the same as a portrait lens is attached. It apparently does not take the place of the existing lens.

Here's How

Continued from page 121

reverse the film in the projector, threading it with the emulsion AWAY from the lens instead of toward it, so that left and right will be in their proper relationship in the projected picture, and the letters in titles will be readable. Don't worry about the mirror in focusing: just focus in the usual way until the picture is sharp on the screen.

—Dwight Warren, A.S.C.

Shooting a Prize Winner

Continued from page 115

for reinforcement. These were of various sizes and were very hard. I have learned that every amateur should have some kind of softer reflector for front lighting and faces because many times the hard silver reflector will give too much light. Many of our Indian shots were taken without the use of reflectors because through experimentation it was found that our make-up could be burned out and we would entirely lose our Indian make-up, so in most cases they were back-lighted with very little front light.

For my personal screening of this picture it is accompanied by a musical score, supplied by phonograph records. During the opening sequence the music is of slow rhythm, gradually increasing to an Indian war dance, then as the covered wagons appear, of course we must have a medley of "Oh, Susannah," as no wagon scene is complete without this well-known selection. Then in the battle sequence we raise to a very dramatic pitch which gradually tapers off to return to the opening rhythm for the final part of the picture. We were able to cover the entire picture with a selection of only four recordings which is a thing that should be done if possible, because of the ease of changing these records during the running of the picture.

The making of this picture was not only a great deal of fun for all who participated, but it was an education as well. It was the first picture of this type that I had ever attempted, and I look forward to the possibility of trying something similar in the future.

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- Color Filters and their use.
- Effect Filters and their use.
- Filter Factors for Agfa Films, Eastman Films, DuPont Films.
- Filter Factor compensator.
- Camera set-ups for Close-ups, Medium Size, Full Figure.
- Motion picture lenses, Astra, Cooke, Hugo Meyer, Bausch & Lomb, Dallmeyer, Goerz, Leitz, Zeiss.
- Lens Angles for lenses from 25mm to 200mm.
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The Depth of Focus table alone would prove very valuable to any amateur.

In a very quick and condensed form it gives a volume of information on Filters. The title of this section is "Color Filters and Their Uses." The title alone explains fully what is told in those few pages.

Only a limited number of these books were printed and the selling price is $2.00 each.

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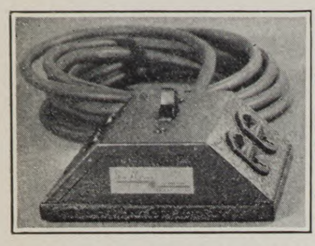

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FILMS I HAVE USED

Continued from page 122

line; and part of the picture framed one way, part the other. For a while it looked as if the whole venture would be a total loss. Finally Cecil De Mille and some of the technicians took the negative back to the Lubin Laboratory in Philadelphia where they cemented blank celluloid strips along the edges of the entire negative—and reperforated the whole film by hand!

When you compare the way we shot our early-day film and the methods we use now, the matter of exposure stands out amazingly. With our old, ultra-slow emulsions we used to stop down to around f:45 (yes, I mean forty-five!) on exteriors. Today, with an infinitely faster film, we don't use nearly such small stops—in fact, we don't often have 'em on our lenses. f:16 or f:22 is regarded as stopping down a lot, while often we open the lenses 'way up—even shooting wide open at f:2.7—and a reduced shutter-aperature. What's the answer? Changes in laboratory methods, of course. In those old days, they used developers which were so strong that a modern film would develop if you only waved it over the tank—and they steeped their film-racks in that dynamite soup. The result was a negative that looked almost as black as a piece of steel, and was a matter of soot-and-whitewash contrast. Grain? Nobody gave it a thought—but it was terrible, judged by modern standards. No wonder folks called them the "flickers," and complained of eyestrain!

I haven't the courage to open the argument over who first introduced Panchromatic film. Besides, Joe DuBray, A.S.C., told me the other day that when he first came to this country for Pathe, back in 1909 or 1910, Pathe had a film that was so sensitive to orange as to be almost panchromatic. At any rate, Joe says, it was more panchromatic than the Verichrome and Plenichrome emulsions we use in our still cameras today, so it must have been pretty good. With it, he said, he was able to shoot on days when other companies couldn't, and also later in the yellow evening light. Apparently, that Pathe outfit was a pretty modern bunch, for even back in 1912 or so their Bound Brook laboratory used developing-machines, with spray-washing, had a real scientific research department, and even practiced silver recovery from the used hypo solutions!

My own first experience with Panchromatic film came years later, after the war, when I was one of the first three cameramen to use panchromatic cine film in photographing the Grand Canyon. The film I had was Goertz stock, and it was a mighty good film. I used it for a whole series of travel-shorts I made, called "The Honeymooners in the National Parks." I still recall that some of those subjects played at Grauman's Egyptian theatre, and (thanks to the Panchromatic film) got unusually favorable reviews.

Of course, the difficulties we had with those early-day Pan films would in themselves fill a book. Laboratory-men would forget they were developing Pan, and develop by red light, pulling the racks out of the tanks every so often to see how they were developing. In one instance, I recall that I got peculiar white flashes every eight feet, caused, I finally discovered, by a laboratory-assistant who carefully loaded the racks in the dark, but stacked them in a corner to await their turn in the tanks—while he calmly smoked a cigarette! The glow of his fag was enough to fog the film at the places where it curved, unprotected, over the top bar of the developing-rack.

No discussion of early-day films and filming is ever complete without mention

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of that bugaboo—STATIC. For the benefit of those whose memories don't go back that far, I'll explain that static was a pleasant, flickery, white marking that looked as though you had inadvertently set up behind a particularly naked and jittery tree. We knew it came from a discharge of static electricity—but we didn't know when or how. And everyone had his own idea as to how to prevent it. Billy Bitzer and others swore by intricate spirit-lamps which warmed the cameras (static only appeared in winter weather). Others advocated—and used—metal cranks which, they said, grounded the camera through the arm of the operator, and so dissipated the static charge. Another man had a tiny metal brush which swept the surface of the film to absorb the charge, while another of the old-timers filled his camera with such an intricate coil of wires that if there had been any radio in those days he could have tuned in Timbuktoo! (P. S.—None of them really worked.)

But I think the only one of them all who really hit the cause and cure of static was Arthur Edeson, A.S.C. He reasoned that static was due to over-rapid changing of the temperature of the film. So when he made any winter exteriors, he would always load his magazines the night before, then pack them into an oilskin bag and bury them in the snow overnight. After exposure, he was equally careful about warming the film slowly. And he had no trouble with static, even at times when, at such Eastern winter locations as Lake Placid or Saranac Lake, there would be four or five companies shooting—and all but Arthur getting ruinous static!

The proof of the pudding, so to speak, is the fact that many years later, when Clyde De Vinna, A.S.C., was in Alaska photographing "Eskimo," long after static had been forgotten as conquered, his last shipment of film broke out with a lovely case of static-markings. The film, he says, had been stored for weeks virtually in the open (which was 30° below zero or worse). After shooting, the film had to be rushed back to the California laboratory, so it traveled part way by air, part way on a nice, warm boat (probably somewhere near the boiler-room), partly by train, and partly by air mail—undergoing several very sudden and extreme changes of temperature.

But as far as the rest of us are concerned, Eastman's introduction of "X-Back" film abolished static. This happened about 1915. The "X" backing was some sort of a resinous backing on the film which held the static charge. It's still included in modern films, they say. What was it? No one knows but the Eastman experts—and they won't tell!

When to Use Double Exposures

Continued from page 118

part you want unexposed in the first take, and the other to shield the already-exposed section when you make the second take. The edges of the mattes should be smooth, and the mattes should naturally be exactly the opposite of each other.

Making the shot is simply a matter of inserting the first matte, shooting, rewinding, changing mattes and shooting again. Remember, by the way, that if you want to matte out, say the right-hand side of the picture, the matte must cover the LEFT-HAND side of the aperture, since the lens reverses and inverts the image on the film.

In making split-screen shots, it is absolutely vital to use a tripod, for the camera must be in identically the same position in each shot, or the two halves won't match. It also helps if you pick your camera set-up so that the matte-line coincides with some definite line in the set, as, for instance, the line formed by shooting diagonally into the corner of a room. The action must naturally synchronize, too: the simplest way to assure this is to rehearse carefully, timing both rehearsal and shooting by slow, deliberate counting. If, for example, you have a shot showing your neighbor sitting reading his paper, when suddenly the door opens, and in walks the same man, the seated man must know when to look up and see "himself," while he who comes in at the door must likewise know when to react to his double's surprise. If your actor knows that at the count of five, his walking image will enter, that at nine, the seated image sees the double, and that at ten, the double bows and speaks, it is easy to make the action synchronize.

"Ghosts," incidentally, can be produced the same way, but without mattes except in case some natural person is to be in the shot; the ghost is a simple double-exposure, so that the background will show through the tenuous apparition.

Now, how to use these tricks! Simple superimposed multiple-exposures can be used to show more or less parallel action, suggested by the basic scene. For instance, if we have a girl whose sweetheart has gone out to a Western ranch, and show the girl reading a letter in which he tells what he is doing, we can double-expose shots of the boy over either a shot of the girl reading, or a close-up of the letter. The same idea can be

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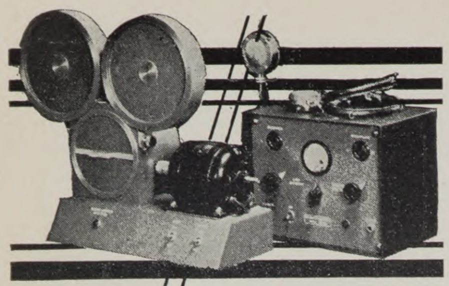

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used to show what a person is thinking about. Let's say Mother is at a bridge-party—but can't recall whether or not she turned off the fire under the dinner dishes: double-expose a shot of Mother playing worriedly, and a close-up of a kettle boiling over on the stove, and you tell the story simply, in half the footage you'd need otherwise. And the same idea can cut over something a character is remembering, or show mental confusion, and so on.

Ordinarily, split-screen double-exposure is pretty clearly a trick, and should be used as such. The dual role idea, in which we see the same person beside himself in the same shot, apparently two individuals, is naturally a rather limited dramatic proposition. But split-screen work can be used for other purposes. The most common, of course, is in introductory titles. There, one-half of the split-screen carries a title introducing some person or place, while the other half of the screen shows the person introduced.

This same general type of split-screen can portray parallel action. Say we have two people talking by telephone: a split-screen shot can show both ends of the conversation at once. Or say our two people are going somewhere to meet: the split-screen can show this, too.

By multiplying our exposures, we can get some very interesting montage effects. For instance, using mattes that divide the screen in quarters, we can show four different things going on at once—and if we want to, we can have any one of the quarter-screen scenes change without affecting the others. Lastly, to make the effect still more "montage-y" than ever, we can add a superimposed full-screen exposure over the others. For instance, say we want to show, quickly, the news of some event being flashed abroad by newspapers. One of our four split-screen shots may show a newsboy (preferably in close-up) crying his "Extra! Extra!"; a second might show the delivery-wagons distributing the papers; a third, a close-up of clicking telegraph keys; the fourth, a shot of a man picking his paper up from the doorstep, while over all would be a shot of papers flowing from a newspaper press.

OPTICAL TRICKS YOU CAN DO

Continued from page 119

The answer, of course, was a mirror. I had two semicircular notches cut out of its far edge, and the girls slipped their heads through these notches. The mirror was slanted slightly down: the lens of the camera was just about level with the farther (and higher) edge of the glass, and the nearer edge slanted down enough so that the entire foreground was filled by the glass. The idea works just as well with one person as with two, though not so bewilderingly of course. The mirror should be held steady during the shot, so the trick won't give itself away.

One of the first cinetricks most amateurs learn is the trick of getting reversed-motion shots by turning the camera upside-down. But it isn't always convenient to use your camera in that position. So why not use mirrors to get the same effect? It isn't hard: simply take a couple of fair-sized mirrors, and place them together to form an angle. The upper mirror reflects the scene you are shooting; the lower mirror reflects the image of the upper mirror, and the camera photographs this lower image which is of course inverted. The upper mirror will probably be slanted forward a little, while the lower glass will slant downward at a convenient angle. You can easily mount your mirrors in little wooden frames, and hinge them together. The lower mirror can then be screwed to a tilting tripod-top, or any other handy support.

And right here, I want to clear up the most important thing in photographing mirror-tricks—focus. Some of the people who read my last article on tricks with mirrors came to grief because they tried to focus on the mirror, rather than on the object reflected. That is, if you are photographing a reflection in a mirror three feet from your lens, of an object ten feet from the mirror, your focus will be three feet plus ten feet, or thirteen feet. You can easily see how badly out your focus would be if you set the dial only for the three feet from your lens to the mirror! It is also safest to stop down rather well when photographing mirrors, in order to blend the reflections from the front surface of the glass into the main reflection. For the same reason, the thinner the glass in the mirror, the better for your picture.

With mirrors, you can also get some of the effects of split-screen double-exposure shots without having to wind your film backward. Simply take a thin mirror and set it at an angle in front of your lens—preferably several inches in front of it—with the nearer edge on the centerline of the lens. On one side of your frame, you'll get whatever the mirror reflects; on the other, whatever is directly in front of the unmirrored side of the lens. Where you can use a large title-card, this is an easy way of making those introductory titles where on one side of the screen we read, "Introducing Joe Doakes," and on the other we see Joe himself in action. Here again, focus and stopping down for depth are of the greatest importance. They mark the difference between ruining your shot and getting it.

Balancing Sea and Sky with Filters

Continued from page 114

All too often, when the light was right for me, the wind would be wrong for the sails—and when the wind suited the sails, I'd be faced with a difficult lighting.

As a rule, a front or cross light is the best; a back-light is sometimes effective (especially for night-effects and sunsets), but it also gives rise to tiny, glancing catch-lights on the waves, which can be very troublesome. Sailing ships and sailboats are probably among the most attractive subjects, but to show them at their best, you must understand lighting. The sails are naturally the salient feature: they should look white, clean and billowy. This effect is best achieved when, if you are photographing from the side or ahead, the sun strikes the sails from ahead; shadowed, the sails tend to photograph grey. Photographed from astern, few sailboats are very pictorial, though square-riggers in a strong, flat light are sometimes interesting. Instead of photographing a windjammer from dead astern, however, when you have to use a rearward angle, try to get a rear-quarter view, as this shows the sails to better advantage. Fore-and-aft rigged boats, incidentally, when you are photographing them from the side, look most effective if you are on the leeward side of them—that is, the side toward which the sails billow.

Lastly, when the main object of interest in your scene is people, use reflectors! Remember that the broad expanse of sky and water is, in a sense, a tremendous reflector throwing light into your lens from all angles, and especially from behind the people. If you place your people so they are in a front light, it is not so bad technically, though the artistic satisfaction is doubtful. But if you have them in a cross-light, or in the shade, if you expose cautiously enough so that the highlighted distance is not "burned up," there will be almost no detail in the shadows. Reflectors, combined with 3-N-5 or 5-N-5 filter will solve this problem. Better yet, if you can, place your actors on the shady side of the deck, and use part of the ship—a deckhouse, or the like—for your background instead of the glaring sea or sky.

Finally, remember that all generalities about marine photography are false—including this one. The one fixed rule is to vary your technique to meet the conditions of each individual shot.

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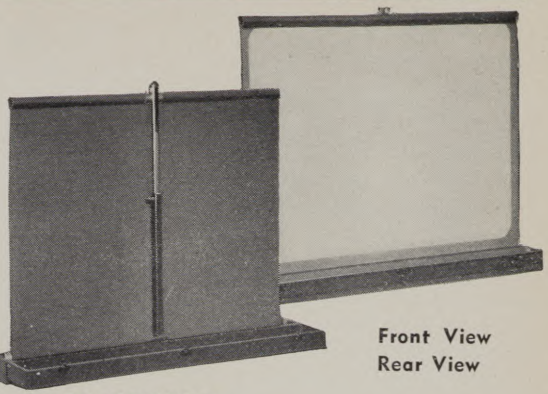

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The Camera Goes 'Round and 'Round

Continued from page 116

SCENE 18: CLOSE SHOT from a low angle from the side, with the camera steady—not panning—of Jimmy as he rides up and down on the board.

SCENE 19: CLOSE SHOT from on the board, directly in front of Jimmy. You can get this by sitting on the board and mustering man power on the other end. We see Jimmy enjoying his ride, the landscape behind him rising and falling.

SCENE 20: MEDIUM SHOT shooting from Junior's seat, straight along the length of the board to frame Sister at the far end. The effect is the same as in Scene 19.

SCENE 21: MEDIUM SHOT, same set-up as Scene 20. Slow your exposure rate down to ——. Sister will be seen bouncing up and down at a furious and comical speed.

SCENE 22: MEDIUM SHOT of the merry-go-round. The children run in, scamper aboard and start it in motion.

SCENE 23: CLOSE SHOT with set-up at level of children's faces. As the platform whirls, the children will one by one come in and go out of focus.

SCENE 24: CLOSE SHOT from the top of your borrowed step-ladder placed close to the platform, shooting down on the children as they ride around.

SCENE 25: CLOSE SHOT from a low angle, shooting underneath the platform. Catch the dangling legs of the children as they come by.

SCENE 26: CLOSE SHOT of Junior, if he is tiny, on the platform holding on for dear life and enjoying himself immensely. Keep the camera on him, panning as he moves around slowly.

SCENE 27: CLOSE SHOT from your seat on the platform, shooting across the merry-go-round at the children seated at that side, as the affair goes round and round.

SCENE 28: MEDIUM SHOT of the children riding. Shoot it at 8 and they will spin like a top.

Complete your picture with similar unusual shots of the children playing on whatever other apparatus may be found at the playground. Look always for the uncommon angle and the possibilities of slow—or fast— motion.

As, for instance, if there is a horizontal bar, have the children perform whatever stunts they can execute. Shoot from odd angles, increase or decrease your shutter speed. The results will be hilarious to the children and bring forth many a chuckle from grown-up viewers when placed on the screen.

More, it will give you valuable experience in the flexibility of your camera and the infinite possibilities that exist in almost every shot for getting away from the humdrum straight-from-the-shoulder scenes by the simple expedient of exercising your ingenuity. Camera angles and different close-ups contribute immeasurably to any picture.

And, to close this continuity, Fade Out on a scene of the children at the refreshment stand noses buried in tall lemonade glasses or with pop-bottles pointed skyward from thirsty lips.

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The Motion Picture CAMERA Magazine

25c

March,
1936

Published in Hollywood,
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- Training Makes Triumphs
- Rapid Processing Methods
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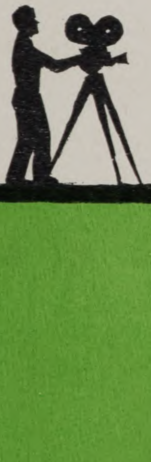
- . . . and other features



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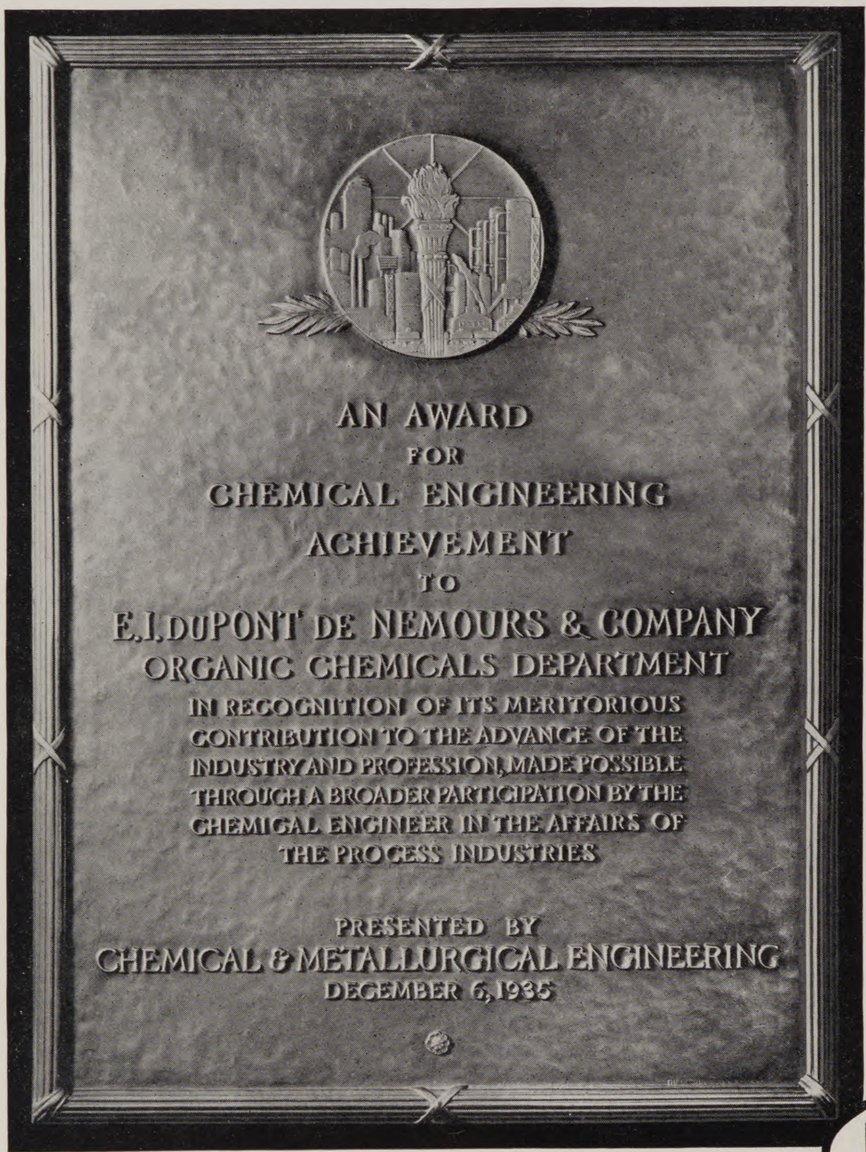

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OF CINEMATOGRAPHERS, INC.
6331 Hollywood Boulevard
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Telephone GRanite 2135

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Next Month

● We have already prepared a full and detailed description of a professional color process which will soon be employed by one of the major studios in Hollywood.

● Also we have a fine article on lighting color by Cameraman Skall who is now shooting the latest Pioneer color opus.

● Dr. Meyer will give us another of his articles on Controlling Photographic Reproductions and we will give the concluding installment on the series, titled "Rapid Processing Methods."

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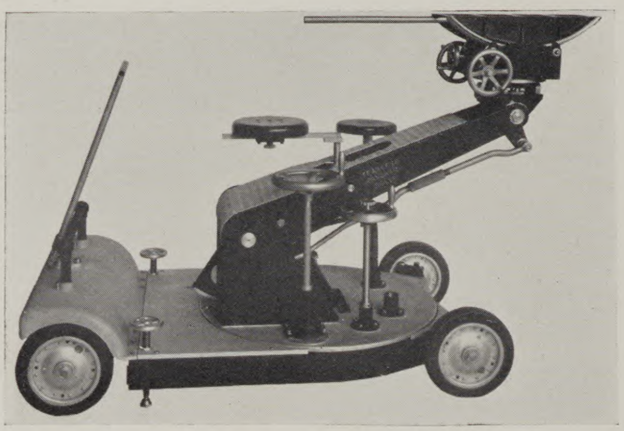

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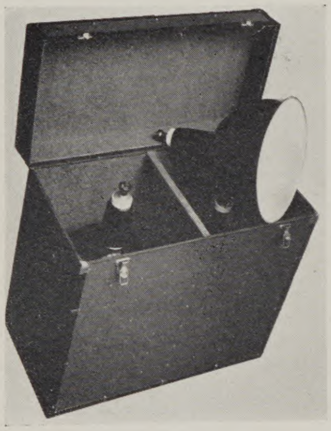

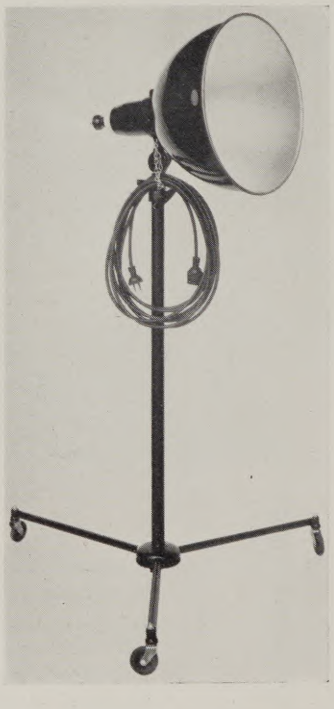

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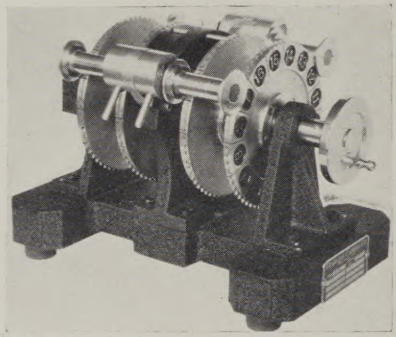

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Training Makes Triumphs—

Is Charles Lang's Experience

by

Harry Burdick

Charles Lang, A.S.C.

WE have a new and second generation of ace cinematographers in this center of cinema circles. And a younger generation, in contradistinction to the old-line guard of camera wizards who have been performing photographic miracles since the very advent of sprocket-holed celluloid some twenty-five years ago.

As illustrious instance of this encouraging influence is nominated Charles Lang, A.S.C. In office as Director of Photography for the relatively narrow span of six years, from his camera have issued such outstanding cinematographic creations as "Lives Of A Bengal Lancer," "Peter Ibbetson," "Desire" and, currently, "I Loved A Soldier," the latter duo being portrayals of Marlene Dietrich.

Here, certainly, is a recent succession of notable achievements worthy of the most matured artist. Each work is of merit compelling comment. His "A Farewell To Arms" brought to him the Academy of Motion Picture Arts and Sciences gold award in 1934. Annual appraisals by professionally discerning critics find his name high in reigning practitioners of the period.

Lang's meteoric ascent to cinematographic prominence is by no means a quirk of happenstance. Under it lies the same type of studious preparation and devoted acquirement of experience that marks the progress of ambitious members of medical, law and other professions. Following the framing of his university sheepskin, Lang got himself a job in the Paramount laboratory. It was just that and nothing more—a job. But it was, in reality, the launching of his life career, for during following years he was assigned to every department in that laboratory. Applying himself industriously and intelligently, he obtained by this laborious route complete understanding of what happens to negative and why.

Came long apprenticeships as Assistant and then Operative Cinematographer, learning stage technique and camera mechanics from the genius of established masters.

So, when opportunity presented him with complete control, it is not surprising that his broad and comprehensive steeping in fundamentals should show fruition in notable productions of exceeding worth.

He goes about his work calmly but with the fervor of the sharp specialist. He has the confidence inspired by his training, moves surely and swiftly. Scenes flow past his lenses with remarkable smoothness and speed, a phase not unappreciated by acting personnel nor keen-eyed production officials.

His two Dietrich sagas are superb specimens of prestige-star lighting. A definite controlled source of illumination is employed throughout. A high front-light paints glamorous tones over the star's features. There is much shading and gauzing.

He lights individuals, not scenes; and then blends them into a scenic unity of balanced composition. The star is maintained as his photographic focal point but not to the detriment of other players nor the scene in its entirety.

This principle is observed irrespective of mood demanded by varying degrees of drama in story. The two Dietrich films are good instance. "I Loved a Soldier" has to do with a peasant chambermaid of the post-war period in Austria. It is in somewhat low key.

"Desire," dealing with an ultra-smart modern woman in sophisticated environment is far more brilliant and photographically scintillating. There is exposition of more contrast tonally. For every highlight there is an area of impenetrable black. The more intense the drama, the wider are these expanses of deep blacks.

But under both treatments, his shrewd sense of individual lighting prevails and with these italicized characters welded into harmonious scenic balance.

"Peter Ibbetson" provided intricate problems of precise poise in mood determination. It required an obvious dream quality, yet that of a living dream; a feeling of reality in dream. There was much diffusion done at exact levels. Then, for the reminder of reality, Lang poured strong shafts of very real light in through opened windows and doors.

An absolute opposite is the "Bengal Lancer" undertaking. Here is definiteness of action, powerful flow of masculine movement. Lang evolved a strictly masculine mood with strong, robust and virile light. While he is blessed with an inherent drama sense, he appreciates the full audience appeal of bold strokes of sheer beauty, as this picture reveals, When the picture embarked on its commercial travels, box-office reports from all quarters acclaimed the appeal of this sweeping artistic ingredient. Some critics went so far as to assert this dominant beauty content actually carried the film.

Lang pursues his camera career unmanacled by "white elephants" of precedent or studio tradition. To his work he infuses the courage and enthusiasm of the artist who

Continued on page 105

Making Pictures in England

by
Lloyd Knechtel A.S.C.

SLIGHTLY over three years ago, in a Hollywood studio, I met a gentleman from the Humphries Laboratory of London. I must have been amused at the enthusiasm he showed in talking about the future of the British film industry, for I remember he left me with the remark, "Don't laugh—you'll probably be working with us in England yourself someday!" Less than six months later I was in England, associated with the Humphries Laboratories, and in charge of an Optical Printing and special process department which served most of the British studios! And during the three years which have elapsed since then, I have seen many of my friend's prophecies fulfilled, and even exceeded, by the phenomenal growth of the British Cinema.

To date things accurately, I arrived in England just as "The Private Life of Henry VIII" was in production; in fact, that film was one of the first British pictures on which I did any work. Up to that time, few even of the English had taken their film-industry seriously—and on wonder, for most of the activity in British studios had consisted of turning out "quota pictures" on budgets and schedules that would cramp the style of a poverty row quickie producer. Since "Henry VIII," of course, British pictures have improved until today you've got to look closely at the trade-mark to tell whether a film was made in Hollywood or England.

The foundation of this improvement was of course due to the fact that once Korda had proven it possible to make outstanding pictures in England, money became plentifully available for production. And a tremendous factor in the physical improvement of British films is that once the money was available, the British industry was eager to obtain the latest in equipment, and the most capable technicians.

The equipment used is predominantly American. An American raw-stock—Eastman—seems to be the most popular film: strangely enough, in a country where so many excellent plates and photographic papers are produced, no English firm seems to have entered the motion picture film field, leaving it wholly to foreign interests; Eastman, DuPont and Agfa, with Eastman getting the lion's share of the business.

The camera equipment used depends very greatly upon the nationality of the Cinematographer using it. The Mitchell is fast becoming the most popular type for all classes of work; but the numerous German Cinematographers who have emigrated to England frequently use the French-made DeBrie "Super-Parvo," which is a compact outfit built into its own soundproof case. One studio for some time used a Czecho-Slovakian camera called the "Cinephon," but recently discarded them in favor of Mitchells. Some British-made Vinten cameras are also to be seen. The European-made cameras while beautiful examples of design and workmanship, do not seem to stand up as well under the hard usage of modern production as well as do the American Mitchells.

Lloyd Knechtel, A.S.C.

Lighting equipment, too, is mainly American, with the Mole-Richardson types the most popular. There are a few small British firms, but their products cannot compete with American lamps. There is nothing in Europe that can compare with the new Mole-Richardson "Solarspots".

George Teague's background projectors are being used in a number of the studios, and have that field pretty well to themselves.

A few years ago, the weakest point in the British film industry undoubtedly was the lack of good laboratories. I recall reading an article written in this magazine only a few years ago by a director who had made a number of pictures in England, which stated that there were only two good laboratories in all Europe—and neither of the two mentioned was in England. This situation has very definitely been remedied, and today the laboratories serving the British studios, and printing foreign releases for American producers are second to none. There are, I think, fewer studio-owned labs there than in Hollywood, and a greater tendency on the part of producers to patronize outside laboratories.

In sound, the familiar ERPI and RCA systems are evident, but several studios use British systems, especially British Acoustic and B-T-H, which are both excellent.

Most recently, England has grown intensely interested in color, and new or nearly-new color-processes are springing up overnight like so many weeds. As is well known, Technicolor is putting up a plant near London, and as Hollywood has already proved Technicolor's three-color process, the

Continued on page 102

Rapid

D-72

Water (about 125°F.) (52°C.)	Avoirdupois	Metric
	16 ounces	500.0 cc.
Elon	45 ounces	3.1 grams
Sodium sulfite, desiccated	1½ ounces	45.0 grams
Hydroquinone	175 grains	12.0 grams
Sodium carbonate, desiccated	2¼ ounces	67.5 grams
Potassium bromide	27 grains	1.9 grams
Water to make	32 ounces	1.0 grams

CHROME ALUM FIXING BATH

(F-23)

Solution A	Avoirdupois	Metric
Sodium thiosulfate (hypo)	2 pounds	960.0 grams
Sodium sulfite, desiccated	1 oz. 290 grains	50.0 grams
Water to make	96 ounces	3.0 liters

Solution B		
Water	20 ounces	600.0 cc.
Sodium sulfite, desiccated	290 grains	20.0 grams
Sulphuric acid, 5%	5 fluid ozs.	160.0 cc.
Pottassium chrome alum	4¼ ounces	128.0 grams
Water to make	32 ounces	1.0 liter

Dissolve the constituents of Solution A and Solution B and cool bath to 70°F. (21°C.). Add Solution B slowly to Solution A while stirring the latter thoroughly.

CAUSTIC PROCESS DEVELOPER

(D-9)

Stock Solution A	Avoirdupois	Metric
Water (about 125°F.) (52°C.)	16 ounces	500.0 cc.
Sodium bisulfite	¾ ounce	22.5 grams
Hydroquinone	¾ ounce	22.5 grams
Potassium bromide	¾ ounce	22.5 grams
Cold water to make	32 ounces	1.0 liter

Stock Solution B		
Cold water	32 ounces	1.0 liter
Sodium hydroxide	1¾ ounces	52.5 grams

For use up to 90°F., mix equal parts of A and B, and add 10 cc. of formalin (40%) and 10 cc. of Phenosafranine solution (1:1000) per liter of mixed developer (2½ drams per 32 ounces).

ULTRA RAPID DEVELOPERS

When the film can be processed by machine, and development times of 1 minute or less are desired, the D-82 developer, with 10 grams of extra sodium hydroxide added per liter (150 grains per 32 ounces), or the D-8 developer may be used. If the required development time is of the order of ½ minute, it may be desirable to add 25 cc. of ammonia to the modified D-82 developer.

D-82

	Avoirdupois	Metric
Elon	200 grains	14.0 grams
Sodium sulfite, desiccated	1¾ ounces	52.5 grams
Hydronquinone	200 grains	14.0 grams
Sodium hydroxide	125 grains	8.8 grams
Potassium bromide	125 grains	8.8 grams
Wood alcohol	1½ ounces	48.0 cc.
Water to make	32 ounces	1.0 liter

Other Rapid Developers

IN TABLES I AND II are also given the development characteristics of several rapid single bath developers for short times of development. The values listed are: gamma which is a measure of the degree of development; fog: relative emulsion speed, which is a comparative measure of the ability of the emulsion to render shadow detail; and highlight density, which is a rough indication of the density contrast obtained in a normally exposed negative of a subject of average contrast. It must be remembered that these are the values found under a given set of conditions as to quantity of developer, size of film, agitation during development, and so on, and that they will vary if any of these conditions are altered. However, although the absolute values will vary, the relations between the different developers will change very little if at all. It should also be noted that the indicated speed ratings are on a purely arbitrary basis, and are not directly related to the speed systems used with the various exposure calculators and exposure meters. The ratio factor necessary to convert these values to the system used with any given device can be determined from a test with some one developer, such as the SD-6 two bath, or the D-72.

The developers listed fall into two classes, those suitable for hand processing, and those which are only suitable for ultra rapid development in special processing machines. These very rapid developers are not suitable for hand processing because the development times must be so short, in order to avoid excessive contrast, that there is not time to obtain uniform development over the whole surface of the film.

When the processing is done by hand, under the conditions mentioned previously, that is, where temperatures above normal may be encountered with no time available for cooling the solutions, the D-72 developer and the D-9 process developer with 1 per cent of formalin added, have been found very satisfactory.

In most cases, the D-72 developer is probably preferable, since it can be used for plates, films, and papers. Also it is more stable and oxidizes only slowly even when left standing in a tray.

This developer has a temperature coefficient of, roughly, 1.5 for a temperature change of 10°F. This means that to get approximately equal degrees of development at different temperatures, the development time must be divided by 1.5 for a 10 degree rise in temperature, and multiplied by 1.5 for a 10 degree drop in temperature. A time-temperature table is given on next page.

This developer has a sufficiently high concentration of salts to prevent excessive swelling up to 80°F., but it does not permanently harden the film so that an efficient hardening fixing bath must be used, and the film fixed long enough to allow of thorough hardening. The F-5 fixing bath may be used at normal temperatures but at the higher temperatures, the F-25 chrome alum hardening fixing bath should be used and the film treated for at least 3 minutes and preferably longer. With the chrome alum bath particularly, there is danger of scum forming on the bath from the neutralization of the fixing bath by the developer, so that the film should be rinsed for a few seconds in an acid bath such as the SB-1 after development, and then agitated thoroughly while it is in the fixing bath. Fresh fixing solutions should always be used for this work. The chrome alum fixing bath has the objection that it does not keep well, so it should be made up in small quantities which can be used in a few days.

In cases where temperatures higher than 80°F. must be used, the D-72 developer, even in combination with the chrome alum fixing bath, is not satisfactory. In such cases the D-9 caustic hydroquinone process developer may be used with the addition of 10 cc. of formalin (40% solution) per liter of the mixed developer to harden the film. Ten cc. of a 1 to 1000 solution of phenosafranine should also be added to prevent the formation of aerial fog which might be caused by the formalin. This developer, as the tables show, has a slightly higher rate of development than D-72, so the times given above or somewhat shorter times, may be used. This developer has poor keeping properties after it is mixed and should be used immediately. The F-5 fixing bath gives good results with this developer although an ultra rapid fixing bath can be used, as with the two bath developer. This developer gives good results at temperatures up to 90°F. but cannot be used satisfactorily at temperatures above 90°F.

It can be seen from the data given in the table that this addition of formalin to the D-9 developer causes a slight

Processing Methods

PART 2

by

H. Parker and J. I. Crabtree

Communication No. 577 from the
Kodak Research Laboratories

increase in the development fog, a slight decrease in the emulsion speed, and a very slight decrease in the rate of development.

More complete information on regular processing methods (not rapid processing) at high temperatures is given elsewhere.

Ultra Rapid Developers for Machine Processing

When it is possible to develop by machine as, for instance, with motion picture film, it is sometimes desirable to obtain high densities in very short times of development. With machine processing the treatment of the film can be controlled much more uniformly than is possible with hand processing, and it is quite satisfactory, therefore, to use very short times and very active developers.

A considerable number of developer formulas have been tested to determine their usefulness with very short development times and the data obtained for the most satisfactory formulas are given in the tables. These results show that when good contrast, with the greatest emulsion speed (ability to reproduce shadow detail) is desired in a very short time of development (1 minute or less), formula D-82 with the addition of 10 grams per liter of sodium hydroxide gives the most satisfactory results. This addition of extra sodium hydroxide to the D-82 developer causes a very considerable increase in the rate of development, so that considerably higher gammas are obtained. For the very short times of development, higher emulsion speeds are also obtained. It should be noted, however, that for the longer times of development, or for comparisons made at equal gammas, this advantage is lost, and the unmodified D-82 gives just as high emulsion speeds. For very short development times, around 30 seconds or less, it may be desirable to add 25 cc. of ammonia per liter to the modified D-82 developer. This addition is not satisfactory when development times of 1 minute or longer are used, because of the very rapid growth of fog, but for the very short times, it does help to obtain higher emulsion speeds. When the highest possible contrast is desired, the D-8 developer may prove more useful, but it should be noted that for a given exposure and equal times of development the D-8 does not give as high a density as the D-82 with the extra sodium hydroxide for, although it gives a higher gamma, it gives a much lower emulsion speed. When a high contrast is undesirable, but it is wished to obtain high emulsion speed without excessive density in the highlights, the D-82 and D-9 developers give better results than the two higher contrast developers.

While all of these developers give much more rapid development at higher temperatures, it is definitely unsafe to use them at high temperatures because of the danger of excessive swelling of the gelatin film.

Developers for Underexposures

The practical value of a developer for treating extreme under exposures is determined by the minimum exposure value which the developer is capable of differentiating from the development fog under the optimum conditions of development. Experience has shown that for Super-sensitive Panchromatic film treated in these high energy developers, the optimum rendering of shadow detail is obtained when the development is continued until the fog has a density of approximately 0.3 to 0.4. If the development is forced beyond this point, the fog begins to increase more rapidly, so that it tends to obscure some of the shadow detail. As can be seen from Table II, which gives the data for several developers, the gammas obtained at these optimum times of development range between 1.20 and 1.60. Under these conditions of development formulas D-9, D-82 and D-82 with added sodium hydroxide give practically equally sat-

Continued on page 106

D-8

	Avoirdupois	Metric
Sodium sulfite, desiccated	2 ounces	60 grams
Hydroquinone	1 ounce	30 grams
Sodium hydroxide	365 grains	25 grams
Potassium bromide	292 grains	20 grams
Water to make	32 ounces	1 liter

DEVELOPERS FOR UNDEREXPOSURES

When it is desired to obtain the utmost possible shadow detail from underexposed negatives, the D-82 developer for underexposures should be used, with a development time of about 8 minutes at 65°F.

ULTRA RAPID FIXATION

When rapid fixation is desired the hypo concentration of the fixing bath should be increased to 360 grams per liter (12 ounces per 32 ounces). If still more rapid fixation is desired, a non-hardening acid bath with added ammonium chloride may be used. Such a bath should only be used, however, with the two bath developer or with the D-9 developer containing formalin, both of which harden the film, and the use of an acid rinse bath between development and fixation is most important. The F-24 formula is very suitable for this purpose.

NON-HARDENING ACID FIXING BATH

(F-24)

	Avoirdupois	Metric
Water (about 125° F.) (52°C.)	16 ounces	500.0 cc.
Sodium thiosulfate (hypo)	8 ounces	240.0 grams
Sodium sulfite, desiccated	145 grains	10.0 grams
Sodium bisulfite	365 grains	25.0 grams
Water to make	32 ounces	1.0 liter

To make an ultra rapid fixing bath, the hypo concentration should be increased to 360 grams per liter (12 ounces per 32 ounces) and 25 grams of ammonium chloride added per liter of solution (365 grains per 32 ounces of solution).

Temperature	TIME OF DEVELOPMENT				
65°F.	1 Min. 30 Sec	2 Min.	2 Min. 30 Sec.	3 Min.	4 Min.
70°F.	1 Min. 15 Sec.	1 Min. 40 Sec.	2 Min. —	2 Min. 30 Sec.	3 Min. 15 Sec.
75°F.	1 Min. —	1 Min. 20 Sec.	1 Min. 40 Sec.	2 Min. —	2 Min. 40 Sec.
80°F.	— 50 Sec.	1 Min. 5 Sec.	1 Min. 20 Sec.	1 Min. 40 Sec.	2 Min. 10 Sec.
85°F.	— 40 Sec.	— 55 Sec.	1 Min. 5 Sec.	1 Min. 20 Sec.	1 Min. 45 Sec.
90°F.	— 33 Sec.	— 45 Sec.	— 55 Sec.	1 Min. 5 Sec.	1 Min. 25 Sec.

Problems of Controlling Correct Photographic Reproduction

PART 4

by
Dr. Herbert Meyer, A.S.C.
Head of Hollywood Research Bureau,
Agfa, Ansco Corporation

IN DEALING with the subject of color sensitivity of photographic emulsions in relation to visual sensitivity, we have entered the most complex phase of our problem.

At present four types of photographic emulsions are in practical use which are distinguished by different color sensitivity. They are as follows:

(a) **Color Blind Emulsion.**

To this group belong emulsions which are only responsive to blue, violet and ultra-violet. They are represented in practice by Positive film and Sound Recording film.

(b) **Orthochromatic Emulsion.**

In addition to the original blue sensitivity, which is an attribute of all Silver Bromide emulsions, this type is sensitive to the yellow-green range of radiation. Its practical application in the 35mm motion picture field is rather limited at present as it is only used for reproduction of dupe negatives.

(c) **Panchromatic Emulsion.**

This type responds to practically all wave lengths within the visible range of radiation and extends its sensitivity even further towards red and naturally, also, into the ultra-violet range. It is the type generally used for picture negative production.

(d) **Infra Red Emulsion.**

This type, in addition to the original blue sensitivity of the Silver Bromide, is sensitized for the visible dark red and extends its sensitivity far into the invisible range of Infra Red radiation. It is used in scientific work such as astronomical photography, special effects, particularly artificial night scenes, aerial photography, cloud effects, and especially long distance shots where aerial haze prevents registration on other types of emulsions.

The spectral sensitivity curve of a photographic emulsion is commonly determined by means of a spectrograph. This instrument permits only relative judgment or comparison of color sensitivity, and the results obtained might be of very little practical value.

In practice, the color sensitivity is usually tested by actual reproduction of colored objects in conjunction with the use of light filters.

Referring to the discussion of the relation between color sensitivity of photographic emulsions and visual sensitivity, it might be well to first refresh the mind of the reader with some of the fundamentals and terminology of color.

1. Visibility Curve and Spectral Sensitivity Curve of Photographic Emulsions.

The visibility curve represents the relation between visual sensation and wave length. It is measured in brilliance units which are plotted for all wave lengths creating a visual sensation upon the retina of the eye. The shape and the maximum of this curve changes and shifts to a certain extent with any change of the brightness level or intensity at which the reading of the brilliance units are made. For an average brightness level of a non-selective light source (white light), the maximum brilliance lies at 556 m/u (yellow-green), decreasing rapidly towards longer and shorter wave lengths and becoming only 1% of the maximum value of 430 m/u (violet) and 690 m/u (dark red).

The spectral sensitivity curve of any photographic emulsion differs widely from the white light visibility curve, even when considering the best color corrected type, represented by Panchromatic film. The visibility curve resulting from certain selective light sources such as Mazda light, comes much closer in shape to that of the spectral sensitivity curve of the Panchromatic type, which is one of the reasons why corrective light filters are not in need when photographing indoor sets with Mazda light on Panchromatic film.

2. Visual Sensation.

The total visual sensation can be composed of three factors, brilliance, hue, and saturation.

(a) Brilliance is that attribute of any color which makes it comparable to some member of the series of grays.

(b) Hue is an attribute of certain colors by which they differ characteristically from a gray of the same brilliance, and which permits them to be classed as reddish, yellowish, greenish, or bluish, etc.

(c) Saturation is that attribute of all colors possessing a hue which determines the degree of difference from a gray of the same brilliance.

According to these definitions,* two groups of colors have to be distinguished, one of which represents the non-selective or neutral type and includes all grays between black and white. These colors are hueless and differ from each other only by the brilliance factor.

The other group includes all selective colors, which in addition to being distinguishable by the brilliance factor, create a sensation of hue and saturation. Hue is the qualitative attribute, which distinguishes this color from a non-selective gray of equal brilliance, while saturation is the quantitative attribute expressing the magnitude of the difference between a selective color producing a sensation of hue and a hueless color.

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*(See transactions of the Society of Motion Picture Engineers, Volume 10, No. 27, Page 135, and following pages.)

Continued on page 106

An artist's sketch of the placement of clouds in a scene. Clouds to be made synthetically.

Making Clouds To Order Pays

by
Wilton Scott

THE MONEY lost by motion picture troupes forced to "sit down and wait for clouds," if it could ever be totaled, would probably pay the National Debt. The artistic damage caused by attempts to carry on in spite of vacant skies doesn't appear on the cost-sheets, but it, too, would reach an appalling aggregate. And a stenographic report of the comments of all the Directors and Cinematographers who have had to do these things could never go through the mail.

Everybody, in fact, talks about the cloud situation—but nobody ever seems to do anything about it.

That is, until recently. Within the past few months, a world-famous artist and an equally famous Director of Photography, in the course of preparing to film one of M-G-M's most important productions, decided that something would have to be done to ensure the "casting" of properly pictorial clouds in the film. There they were in the illustrator's sketches of the scenes. Less visible, but no less important, they were an integral part of the Cinematographer's visualization of his compositions. Dan Sayre Grosbeck, the illustrator who created the craft of "visualizing" for the screen, and Karl Freund, A.S.C., their heads almost literally in the clouds, have evolved an idea which bids fair to solve the cinema's cloud question.

If nature doesn't supply your clouds, they reasoned, and practical or artistic considerations preclude the possibility of using a conventional matte-shot, the only thing left is to make your own clouds! And that is exactly what they propose to do: combining the Navy's smoke-screen with the Army's smoke-bomb and the sky-writer's trickery to reproduce any natural cloud-formation the weather-bureau could name, in any desired color or combination of colors, "spotted" at exactly the time and place called for by script and production-schedule!

"We were discussing the clouds I had in my sketches," Grosbeck relates, "hoping the weather-man would give us a break when the time came to shoot—though we knew precious well he wouldn't. After we'd expressed ourselves fairly fully, we began to talk about some of the clouds we'd seen and been unable to sketch or photograph. That eventually led us to reminiscences of the fluffy clouds made by bursting shells and signal-bombs during the war—Karl, you know, had seen them from the German side of the lines, while I had admired them between my duties with the Royal British Field Artillery. That in turn reminded me of the time when, in the Siberian Expeditionary force, we used to use fluffy white smoke-bombs to try to entice the Bolshevik artillerists into firing a few rounds so we could spot their battery positions (we hadn't any observation-balloons or planes). I told how I used to sprawl on the hillside and watch their white smoke-puffs billow in the sky. How useful some of those shells would be to make movie clouds!

"We stared at each other—why not? Mortars and shells are still available, and there are plenty of ex-artillerymen to do the shooting! We began to check over the smoke-materials that were available, and how we could use them for cloud-making.

"The Navy's aerial smoke-screen chemicals can be combined to produce clouds that are clean white, yellow, or black. The artillery smoke-bombs come in both white and black. As far as color goes, then, we could duplicate any natural clouds. Next, how about duplicating cloud-formations—and getting them where we wanted them? As far as motion pictures are concerned, the most important cloud-types are the Cumulus and Stratus clouds—the big puffy billowy ones and the long, thin streaks.

"Making Cumulus clouds would be easy, big, low-lying ones, at least. Simply put white smoke-shells into mortars, time them to burst at the right place, and the billowy puff of smoke does the rest.

"For the Stratus clouds, a sky-writing airplane will be

Continued on page 102

[redacted]

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metal units, fitted together with bolt-fastened clamps, and floored with standardized wooden catwalks. It is unbelievable how quickly a crew can platform a set with this system. There is no sawing or fittting to be done; no nailing. The metal tubes are simply clamped into place—and that's that: the platform is ready to use. It is easy with this system to get the lamprail at exactly the right height for low sets, or to conform to oddly-shaped ones. The same units can be used to make parallels and all sorts of special equipment: they have even built a workable crane out of the tubes when the script called for a boom shot.

The British have one peculiar custom which makes it hard for the laboratories and technical personnel. This is the "Trade Showing." They don't preview their films as we do here, but as soon as the film is completed, they have a Trade Showing in some large theatre, to which the press, exhibitors, and so on are invited. The picture may not be released for six months—but the special-effects staff, the cutters, scorers, re-recorders and especially the laboratory people have to work like mad from the time the last scene is shot until the Trade-Show print is ready.

When I went to England, I found that the laboratory had only the smallest nucleus of a special-effects department, and my task was only a little ahead of starting from scratch. That we are today handling every kind of special-effects work—optical printing, miniatures, matte-shots, and Dunning and projected-background composites—for most of the British studios and for many of the American ones, speaks well for the ability and cooperation of my British co-workers. And all of them are British except myself and Bill Leeds, who came over with me to see to the building and maintenance of our equipment. At the time we arrived, optical printing was almost unknown in Europe, and you can imagine the difficulties experienced by directors and writers who had only direct cuts at their disposal to use as transitions. Today, several excellent optical printer installations, operated either by Americans or by Britishers trained by Americans, furnish almost every optical transition known, though Elstree did not follow Hollywood's example in exaggerating the use of trick optical transitions.

At present, the foreign Cinematographers are pre-eminent in England, though there are a number of excellent English cameramen. In addition to such familiar American Directors of Photog-

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raphy as Hal Rosson, A.S.C., Lee Garmes, John W. Boyle, A.S.C., Glenn MacWilliams, A.S.C., Phil Tannura, and the rest of the American contingent, there are quite a number of Germans who for one reason or another have left their homeland during the last few years. In connection with cameramen, the British have a custom which, I think, Hollywood might well copy: they give screen-credit to the Operative Cameraman as well as to the Director of Photography. On their credit-titles, you will see, "Photography by A. So-and-So, Camera, J. Whatzisname." The man credited for "Camera" is the Operative.

I have frequently been asked about the advisability of going to England to work. In my own case and that of others, it has been a good move. In other instances, the results have not been so happy. The British pay well for technical talent, and though taxes and living costs are high, England is a very pleasant place in which to work and to live. But let me strongly advise my Hollywood friends not to come to England on speculation: the government regulations are very strict on this point, and the man who comes other than to fill a definite position has in addition to the problem of finding a job, the certainty that the authorities would not permit him, as a visitor, to take one even if he found one.

Training Makes Triumphs

Continued from page 96

realizes that greatest creative achievements always lie just beyond in the future.

There is encouraging and hopeful indication for the healthy artistic forward days of the cinematographic profession that artist-technicians as exemplified by Charles Lang are being attracted to the fold and are forging to fore-flight ranking.

His professional triumphs are no accidents of circumstance. They are deliberately and ruthlessly planned and moulded on arduous years of study and experience on the firing line. There is eager acceptance of new means and methods; a hand-in-glove quest with the scientists of laboratories for betterments. And, withal, a sound utilization of the sum total of cinematographic approved practice to date.

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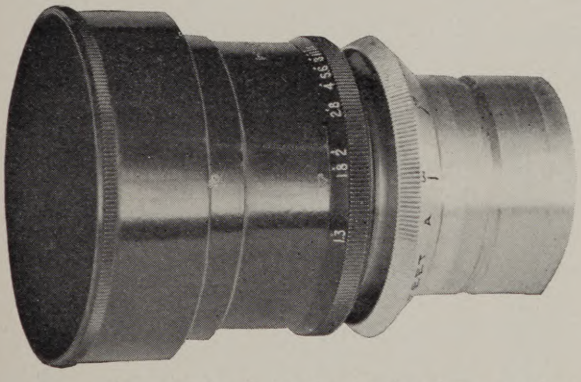

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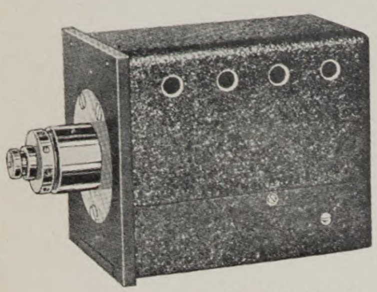

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parted a decade or more back—when a man could merely drift into a camera career. Cinematography as currently performed is a craft that can not be mastered from text-book perusal. There is no substitute for the long, intense apprenticeship period of gaining active experience.

Problems of Controlling Correct Photographic Reproduction

Continued from page 100

4. Absorption, Reflection and Transmission.

Any natural object is visible by virtue of the incident radiation which it transmits or reflects. Any object that transmits or reflects all wave lengths of visible radiation in equal proportion belongs to the group of neutral or non-selectively colored objects, such as gray, white or black, depending solely upon the extent to which they reflect the incident radiation.

All objects which absorb certain wave lengths of the incident radiation to a greater extent than others are selective absorbers. Radiation, which is reflected or transmitted by such objects is different in spectral composition from that which was incident thereon.

The color which an object appears to have depends, therefore, on two factors, its absorbing characteristics and the spectral composition of the incident radiation.

Most of the natural colored objects are of the reflecting type with selective absorption. Consequently, the vast variety of pigments and dyes and their spectral absorption curves are of vital importance to the photographer.

Objects of the transmitting type with selective absorption are best known to the photographer in the form of color filters which are used to selectively absorb or emphasize certain portions of the radiation reflected by the object being photographed.

The absorption curves of pigments are in general characterized by a more or less gradual cut off in comparison to those of transmitting objects, such as color filters, which must show a relatively sharp cut off.

5. Luminosity Curve and Photicity Curve.

The ordinates of the visibility curve as previously explained consist of brilliance units. When multiplying these ordinates with those of the spectral reflection curve for any given selective absorber (such as a pigment for instance), and plotting this product against wave length, the luminosity curve is obtained. The area inclosed by this curve indicates the relative brightness of this object for a given light source.

Similarly when multiplying the ordinates of the spectral sensitivity curve for a photographic emulsion with the ordinates of the spectral reflection curve of any object and plotting this product against wave length, we obtain a curve which is known as the photicity curve.

The area of this curve is proportional to the photographic brightness of the object considered.

These few fundamentals of color should be studied and understood by anyone who concerns himself with the problem of correct photographic reproduction.

The solution of this problem, as was previously stated, consists of rendering brightness and brightness differences or contrast in the final print identical to that conceived by the eye from the natural object.

In practice it will be found that an additional problem of equal importance exists which requires deliberate distortion or a deviation from correct reproduction in order to secure certain desired effects.

Both problems will be discussed further in the following issue.

Rapid Processing Methods

Continued from page 99

isfactory rendering of detail in the extreme shadows, while D-72 gives somewhat less detail in the shadows, and D-8 still less. This is illustrated graphically in Figure 1 which shows the relative appearance of negatives which had been given graded exposures and then developed for the optimum times as shown in Table II. It can be seen that the strips developed in D-82, D-82 with added caustic, and D-9 show from one to two more steps in the extreme shadows than the strips developed in D-8 and D-72. Since each step corresponds to a decrease of approximately 20 per cent in the exposures, this indicates an increase of 25 to 40 per cent in the effective emulsion speed, which is approximately the increase shown in the table.

Rapid Fixing

The rate of fixation as measured by the time required to clear the film of undeveloped silver salts, depends on a number of factors, the most important of which are: hypo concentration, degree of exhaustion of the bath, temperature, and degree of agitation. For low concentrations of hypo the clearing time is decreased as the concentration is increased, reaching a minimum value for Eastman Super-sensitive Panchromatic film at a concentration of about 360 grams per liter of hypo. If the hypo concentration is raised above this value, the clearing time again increases. For rapid work, therefore, extra hypo should be added to the usual fixing bath formula to bring the total hypo concentration to 360 grams per liter (3 pounds per gallon).

When a fixing bath is used, a number of changes occur which tend to increase the clearing time. Therefore, fresh fixing solution should always be used. The temperature of the bath has a considerable effect, higher temperatures giving more rapid fixing but, on prolonged storage at high temperatures, the bath is apt to sulfurize. The F-5 fixing bath can be used up to 75°F., while for processing at much above this temperature, the F-23 chrome alum hardening fixing bath should be used. Thorough agitation of the film in the fixing bath decreases the clearing time considerably as it helps to wash away the dissolved silver salts and supply fresh hypo to the emulsion. Since agitation also helps to prevent the formation of a scum on the emulsion surface, it should not be neglected.

If a still shorter fixing time is desired, an improvement can be obtained by the addition of about 25 grams per liter (3¼ ozs. per gallon) of ammonium chloride. If much more than this quantity is added, the clearing time will be increased, but this quantity gives a decrease, particularly if the hypo concentration happens to be a little low. The addition of ammonium chloride seems to be most effective with a non-hardening bath such as the F-24 with increased hypo but it also has some effect with hardening baths such as the F-5.

For rapid processing, fixation may be considered to be sufficiently complete as soon as the milky appearance has disappeared from the emulsion. The processing is completed by washing the film for 2 minutes in a rapid stream of water and drying with blasts of warm air directed against both sides of the film. The warm air blasts may be most conveniently obtained with small electric hair dryers. To hasten the drying and prevent the formation of water marks on the film, all drops of surface water should be removed by wiping both sides of the film with a piece of absorbent cotton, chamois leather, or viscose sponge which has been thoroughly wetted and then squeezed as dry as possible by hand.

After the prints have been made, the negative should be returned to the fixing both for 5 or 10 minutes, then washed thoroughly and dried in the usual manner, otherwise there will be danger of fading of the image if the negatives are to be kept for any length of time.

(Concluded next month)

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Leica Inventor Passes

Oscar Barnack, inventor and designer of the Leica camera, died on Jan. 16th at Wetzlar, Germany, after being sick several months.

Barnack's invention did much toward popularizing photography among many who otherwise would not have taken up this hobby. The use of motion picture film made this type of photography very popular. The Leica camera was first intended for use in making tests in the studio, but its popularity as a candid camera soon outstripped its original function.

Harry Zech Returns

After spending five months in Great Britain, Harry Zech, A.S.C., has returned to Hollywood.

Zech went to London to do backgrounds and process work for Korda's London Films. Also while there he directed the photography on several independent pictures.

Boyle Now "Sunkist"

John Boyle, A.S.C., who has been in London for these many months, became so sick for California sunshine or something as near to it as he could get, that he took several weeks' leave of absence. He flew out of London on New Year's day; then by rail through Italy, as the Italians will not permit British planes to fly over that country. Back to a plane at Brindisi, Italy, to Athens, Greece; then another plane across the Mediterranean to Alexandria and thence to Cairo, where he claims he found the proper sunshine.

According to his letter he used his Leica freely in Egypt, but was not allowed to use it in Italy while flying.

Boyle met Ariel Varges in Cairo, he having just returned from Abyssinia. Harry Perry was in London.

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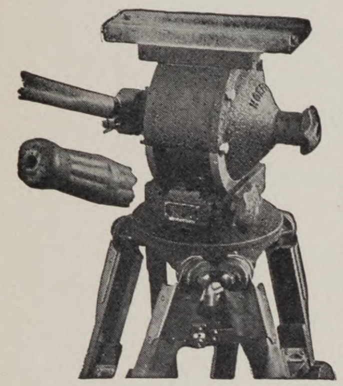

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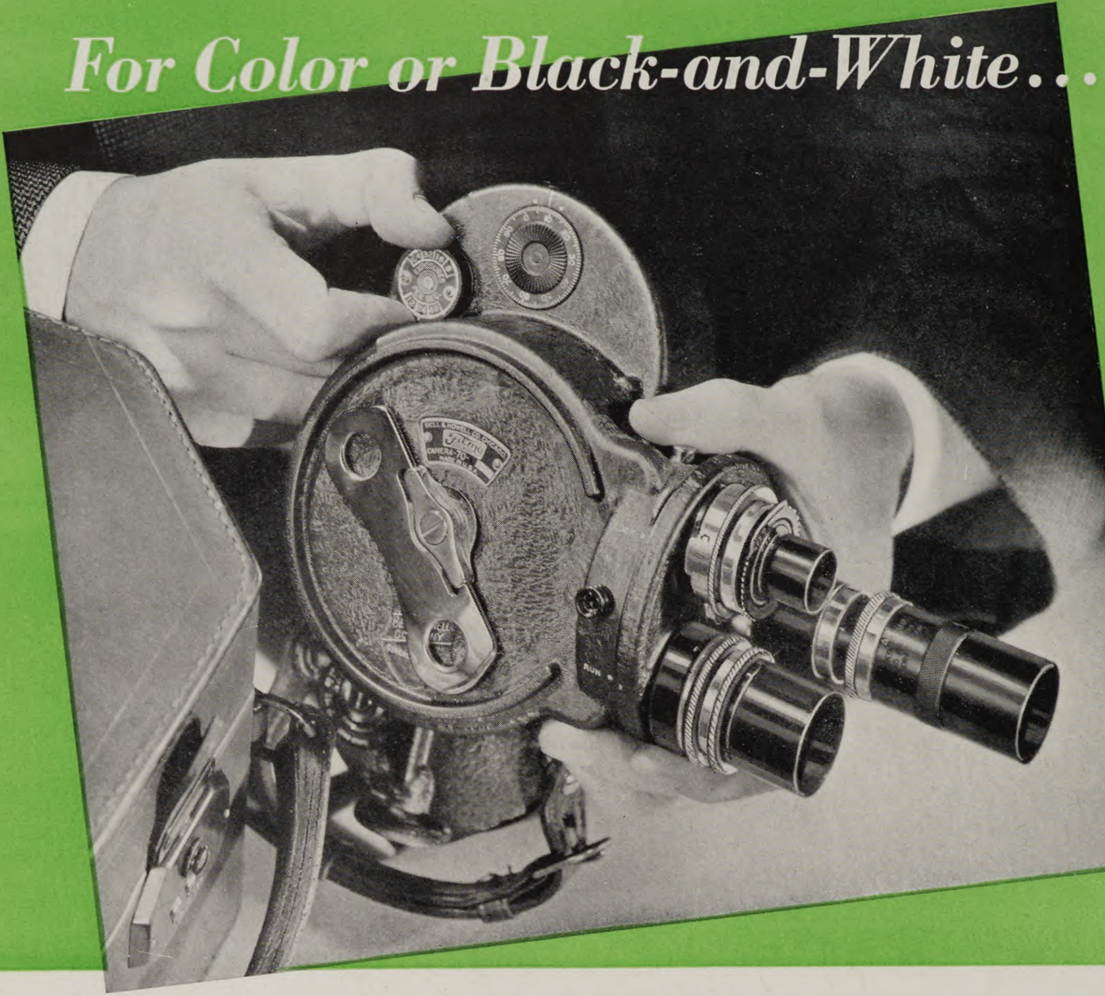

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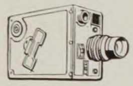

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AMATEUR MOVIES

this issue

Shooting An 8mm Prize Winner
Balancing Sea and Sky
When to Use Double Exposure
Optical Tricks You Can Do
Projection Cabinet . . home made
. . . and other features

MARCH,
1936

25c

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AMATEUR MOVIE SECTION

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PROFESSIONAL Criticism of the Amateur picture is a part of the service offered by the AMERICAN CINEMATOGRAPHER. Many are not aware of this. Hundreds of pictures have been reviewed this past year by members of the American Society of Cinematographers for the Amateur.

Next Month . . .

● Next month's amateur section will again be rich in information right from Hollywood headquarters. A.S.C. members and outstanding Amateur Cinematographers will contribute articles.

Balancing Sea and Sky With Filters

by
Arthur Edeson, A.S.C.

QUICK adaptability is the keynote of success in filming seascapes. You can't bind yourself to one hard-and-fast rule of technique, for the combination of filters, lighting and exposure which gives you a perfect shot today, may not work at all under the conditions you'll meet trying to duplicate the shot tomorrow. Besides, in different scenes, you will have different things to show, and have to present them differently.

Essentially, photographing water scenes is a problem in contrast. You have three basic factors in your picture: sea, sky, and your subject, be it a boat or people. The problem is to reproduce them in black and white on the screen in such a way that folks won't have to stop and figure out which is which. A combination of filtering and lighting is the answer: but the exact combination is subject to infinite variation, because the components of your picture are themselves subject to such variation. The water, for instance, can vary from a strong, clear blue through a range of greeny-greys to a dull slate grey. It may reflect relatively little light, an overpowering glare, or (which is worst) a myriad of dancing catch-lights. The sky, too, can range from a clear blue through a baffling range of haze to cloudy grey and a sultry grey-white. It may be "bald-headed" (cloudless), or sprinkled with thin or thick clouds, or entirely overshadowed. Your subject—well, what variations can't it undergo? You may have a long-shot of a white-sailed windjammer or yacht, a dark liner or battleship, a spray-clouded speedboat, or close-ups of people on boats or looking at them. Your technical treatment must be as changeable as a politician to meet all these variations.

We'll start out by assuming that your exposure is going to be correct. With all the accurate exposure-meters now on the market, there's no excuse for anything else. Besides, in marine camerawork, there is so little latitude between correct exposure and overexposure in the brilliant sea and sky, on the one hand, and underexposure in the shaded areas, on the other hand, that exposure has to be abnormally accurate.

Generally speaking, the aim of filtering should be to provide merely a mild correction, and to cut down the excessive glare. Only on rare occasions is it good to use heavy filters, for they darken the water until it looks definitely unnatural. My personal preference is for the 3-N-5 and the 5-N-5, which consist respectively of an Aero 1 filter combined with a .50 neutral density, and an Aero 2 in the same combination. The Aero filter provides for enough mild correction to make the scene reproduce naturally, while the neutral density screen which is added controls the glare. I used these filters very extensively in making "Mutiny on the Bounty." Sometimes, when the sky and sea are a vague "washed out" blue, you may find it wise to use a heavier filter, in order to separate the two. On the other hand, there are hot, hazy days when both sea and sky show little, if any color, and throw back a sultry, white-hot reflection: then a color-filter is often of little use, and a heavy neutral density filter is the thing, for controlling the glare is all anyone can hope to do.

Only when the sky is clouded over, and both sky and sea are a leaden grey is it safe to use the contrast filters (G, 23-A, etc.). These filters always increase contrast, and if filming a clouded seascape, they may at times help to make a subject such as a ship stand out a trifle more clearly against its grey background. But they should be used sparingly!

When there are picturesque clouds in the sky, and your camera is set up on a good, solid foundation such as dry land, you might try a graduated filter to make the clouds stand out more strongly, without overcorrecting the water. This is rather tricky, though, as the upper division of the graduate must be rather heavy to produce the desired result and it is essential (and by no means easy) to get the dividing-line of the filter at a point in the picture where it won't show up unpleasantly. Using such a filter when you are on a boat is, of course, impossible, for as the boat rolls, the dividing-line of the filter—and the change in filter-correction—dances all over the screen.

There is one type of shot where all normal standards of balance and color-rendition can be thrown overboard. This is when you are filming a speedboat in action. The most picturesque thing about a racing motorboat, whether it is a "Miss America" or a tiny outboard-motor racer, is the visual contrast between the water and the mountainous, snowy wake of the boat. Photographically, this calls for heavy filtering, to increase the contrast. A red filter, such as the 23-A, the 25-A or even the 29-F, is the thing. Such a filter overcorrects the water—the heavier ones will make the water photograph almost jet-black—and provides a background against which the wake's white spray stands out impressively.

Lighting is doubly important in marine photography—and all too often almost beyond control. Generally speaking, when you are photographing a ship or boat, you can't control its course; you have to set up your camera and get the best shot possible under the circumstances. Even in "Mutiny on the Bounty" we couldn't shape the manoeuvers of the "Bounty" and the "Pandora" wholly for the camera.

Continued on page 131

Shooting An 8mm Prize Winner

by

Dr. F. R. Loscher*

TO almost every amateur, at some time, comes the desire to make a real production, and that desire reached a climax one night as I read Wallace D. Coburn's book entitled, "Rhymes From a Roundup Camp." A poem from that book called "To An Indian Skull," seemed to have all that could be wanted for such a picture. In my mind I could see the wagon wheels in the dust, and the dreaded Indian attacks, but to dream of them, and to produce them on the 8mm strip were two different things.

The properties available were only three horses, two mules and one wagon. From the river bed we secured willow sticks which shaped very nicely for the bows of the wagon cover. The cover was made from a piece of old canvas which had been used as a tractor cover. Old leather coats, hats and burlap sacks made most of the costumes. The two dresses used had to be switched between our four female characters. The Indian costumes and old flintlock guns were loaned from the collection of Mr. Coburn, a personal friend of mine.

The hardest part of the shooting was to cover up undesirable backgrounds. The angles had to be up or down, and when shooting from under the wagon in the battle scenes the horses' feet raised enough dust to make a screen which blocked out fences and fruit trees.

One of our jobs was to rig up a set to represent the back end of the wagon, with water keg and sacks. In the opening of the battle scenes the keg was pierced by an arrow and showed the water trickling out. This was done by making a hole in the keg and adjusting a small piece of hose next to the arrowhead. This hose siphoned the water from a can above, giving the effect of leaking. The arrow was then held back and allowed to spring forward as the camera went into action. This springing motion cut carefully with the preceding scene gave the effect of an actual hit.

Toward the end of the story, the wagon train leader is shot while trying to secure more water. This called for fast cutting from a dummy being hit to the leader falling forward with an arrow in his back. The wagon train was pictured by showing only one full shot of the wagon in a series of close shots of the mules' feet and wheels rolling along in the dust.

The cutting of this picture was of great importance; many scenes which looked beautiful and which I would like to have saved were cut short to improve the tempo of the picture. Many of the scenes were only two or three inches long and without quick action a drag would have developed. The tempo of the picture was also raised by the use of double and triple exposures, one especially a close-up shot of horses' feet galloping by was carried through a full wind of the camera. This was then cranked back and the image of a pioneer with rifle was lap dissolved with a burning wagon and two girls and a child running by.

Now for a word about the camera and accessories used. The Eastman Model 60 8mm was used. It had been equipped with a wind-back by the Fried Camera Company, which allowed for producing special effects very easily. The Harrison sunshade and fading glass were also used in the lap dissolves. Fades in the picture were produced by the dye method, using a product manufactured by the Dye Research Laboratory of Los Angeles, called Fotofade. This enabled me to put in many fades which had not been calculated at the time of the shooting. Many of our shots were taken almost directly into the sun to secure effects and back lighting, and at times the sun-shade did not give enough protection to the lens, so it was necessary to use some larger shade above the camera.

The reflectors used in the shooting were made of wallboard with tinfoil glued to them, and a wooden frame-work

Continued on page 124

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*Winner of the Grand Prize in the American Cinematographer 1935 Amateur Movie Contest.

The Camera Goes 'Round and 'Round

by
Barry Staley

HERE is a continuity that is decidedly different. It takes you away from accustomed fields of motion picture making for an interesting excursion into realms of endeavor closely approximating those of the professional cinematographer.

It will provide plenty of fun in the shooting and screening, and give you opportunity for your creative genius to have full play.

Camera angles provide one means, and a most simple one, for injecting variety and life to your scenes. For some reason, the average amateur shies away from them. So here's a chance to dive in and see what effective results you can get.

Every community has a children's playground equipped with swings, teeter-boards, a miniature merry-go-round and similar devices for healthy outdoor sport. To this location we go for a little advanced lens activity.

MAIN TITLE: THE CAMERA GOES 'ROUND AND 'ROUND.

SCENE 1: MEDIUM SHOT of your car arriving at the playground. It stops and the family's assortment of children pile out, running eagerly toward the swings.

SCENE 2: LONG SHOT of the playground showing the various devices. The children run in.

SCENE 3: MEDIUM SHOT of a swing. The children run in happily and scramble for the first chance. Junior wriggles up into the seat.

SCENE 4: CLOSE SHOT of Junior in the swing. He moves forward and out of the camera as Sister, pushing from behind, comes into view.

SCENE 5: CLOSE SHOT, from a low set-up shooting up and parallel with the swing's line of flight; your focus is on Junior at the bottom of the swing. Junior, swinging back from his first upward push. He suddenly comes into view, his face in full focus and disappears as he swings away.

SCENE 6: CLOSE SHOT from a reasonably low set-up; your focus is on Junior at the top of his backward swing. He swings back and is clearly seen during that instant before the swing comes forward.

SCENE 7: MEDIUM SHOT. Borrow a high step-ladder from one of the park attendants. From this high angle PAN to follow Junior's sweeping swing forward.

SCENE 8: CLOSE SHOT. Put the ladder directly in front of the swing. Camera is focused on Junior's position at the top of his forward arc. Suddenly he swings up and into sharp focus, fading hazily as he swings back.

SCENE 9: CLOSE SHOT. The same set-up as Scene 8. Change your shutter speed to 64 frames per second. When screened, Junior will languidly float through the air (with the greatest of ease), mysteriously hang suspended before your camera and lazily drift back.

SCENE 10: MEDIUM SHOT from the ground directly under Junior's highest forward point. Shoot up at him and PAN to follow the complete arc of his backward swing.

SCENE 11: MEDIUM SHOT, to be cut into Scene 11. Get in the swing yourself. Get your elbows locked around the ropes, leaving your hands free, camera leveled straight ahead. Get a husky shove from the youngsters and swing as high as you can. From the top of your backward swing, start the camera. Let it run through a full swing forward and backward. You'll get the ground, horizon and sky just as it looks to a swinger. When screened, you are taking your audience for a ride in that swing.

SCENE 12: MEDIUM SHOT. At the slide. Catch the children running in to the slide, climbing up the ladder and one after the other sliding down to the sand pit at the bottom.

SCENE 13: CLOSE SHOT. From the side of the slide, shooting up. One by one the children flash into view and disappear down the slide.

SCENE 14: MEDIUM SHOT from top of slide shooting down, following Junior's speedy descent and deposit in the sand pile.

SCENE 15: MEDIUM SHOT to be cut into Scene 14. Get in the slide yourself, camera shooting straight down the slide. Keep it turning as you slide down the chute. And don't stop it when you hit the sand pile, even though you turn over. The effect on the screen will be startling.

SCENE 16: CLOSE SHOT from the bottom of the slide, shooting up its length. Junior comes sliding down and directly into the camera. You can get the effect of his coming right off of the screen and into your lap.

SCENE 17: MEDIUM SHOT of the teeter board or seesaw. The children come running in and climb on, teetering merrily.

Continued on page 132

Montage and Symbolism Are Entirely Different

by
Max Liszt*

SINCE the publication of my article on 'Montage" in the January, 1936, issue, I have been requested by several to go more into detail regarding the application of "Montage" and cite other examples.

In trying to do this in the following article, I must bring in "Symbolism." "Montage" and "Symbolism" are two entirely different and separate subjects, even though at times they touch each other and seem to impersonate one another.

In "Symbolism" we symbolize a certain situation or person by the use of an entirely different object; but in "montage" we depend upon the composition of meaningless strips of films to bring over a "suggested" idea. At times these two will touch and, may be, overlap so that a dividing line is hard to draw.

Such a situation appears in Charlie Chaplin's picture, "Modern Times," and well in the opening sequence of this picture. Here we have a shot of sheep, immediately followed by a shot of many people walking. This could be, at first glance, called "Symbolism"; but by further analyzing we also get "Montage" inasmuch as we could tear these two strips of film apart and project them separately whereby each one would be meaningless as to "suggested" idea, but when connected and projected in composition they convey to the audience the "suggested" idea that the people in shot number 2 were "meek as a lamb" and therefore is "Montage," because the definition of "Montage" tells us that:

" 'Montage' is a composition of strips of film, which in their combination and arrangement to one another convey to the audience a (suggested) idea or emotion; but lack this ability when torn apart and projected separately."

Immediately we see where this particular situation has an overlapping of "Symbolism" and "Montage" and the dividing line is hard to draw.

The "Montage" idea of "meek as a lamb" becomes more and more apparent to the audience as the film unfolds, and is brought home most forcibly to the spectator at the moment that the factory worker (Charlie Chaplin) rebels against the existing system while the others remain "meek."

To cite an example of "Montage" in its purest form I like to draw on one of my pictures. In this particular instance the situation was as follows: An old and shabbily dressed man is seen sitting on a bench, smoking a cigaret-stub which he had picked up from the street. At this moment in the story it was advisable and necessary to tell something of the man's past so as to clarify more significantly developments in the man's behavior later on in the picture. Only a few feet could be used so as not to halt the flow of the present-story development; but in these few feet the idea had to be brought over that the man had been well off but had lost everything.

By applying "Montage" this was done as follows:

(1) Close-up of man on bench.
(2) Long-shot of a hotel.
(3) Long-shot of the "Bank of America."
(4) Long-shot of a neon sign reading, "security."
(5) Close-up of a sewer.
(6) Shot of man on bench.

In this particular story it had been previously established that the man was an old actor and therefore a hotel ("home" to an actor) was chosen in number 2. Number 3 is synonymic for money; 4 and 5 speak for themselves. Each and every one of these shots do not mean a thing and most certainly do not convey any "suggested" idea or emotion when projected separately. But by grouping them in the manner as outlined above, preceded and closed by a shot of the man on the bench the "suggested" idea that the man had been well off once was conveyed to the audience in a few feet.

In "Montage" it is of the utmost necessity that the idea or emotion that is brought over to the audience is a "suggested" one. If it is not suggested the combination of the strips of film is not "Montage." By this is meant that the idea must not be received from any one of the strips of films in itself.

For example: Shot of a winding road, followed by a shot of a man sitting on the grass, his shoes off and rubbing his feet. This is not "Montage" inasmuch as we get the idea that the man has walked a far distance (come a far distance) by the very fact that he is seen with his shoes off and rubbing his feet, because if we omit the shot of the road and project the second shot separately we still get the idea that he has walked a long time, and therefore this is not "Montage."

"Montage" would be the following: Shot of a winding road, followed by a shot of a man smoking a cigarette, because neither one of the shots in themselves shows that the man had come a long ways; and by reversing these shots, first the man and then the road, we are able to reverse the "suggested" idea of the man having come a long ways to the "suggested" idea of the man having to go a long ways.

This example brings us up to the all important fact that in "Montage" the succession and placing of the various meaningless shots is of the utmost importance and requires careful consideration as a misplacing of any one shot either will destroy the "Montage" idea entirely or convey an entirely different "Montage" idea than what is demanded.

The reason that "Montage" is so little understood in Hollywood can be blamed on the abundance of money that is a Hollywood's disposal. On account of this abundance of money the directors of Hollywood pictures are depending on sets and the actions of the actors in the scene to bring over the idea, and have never had to rely on their own ingenuity and ability of story-telling with the camera.

If Hollywood did not have this abundance of money, its directors would develop and understand "Montage" inasmuch as "Montage" is an inexpensive but highly effective and powerful method in bringing a point in the story home to the audience.

This is one case where abundance of money is a drawback to the development of motion pictures as a medium of entertainment and education.

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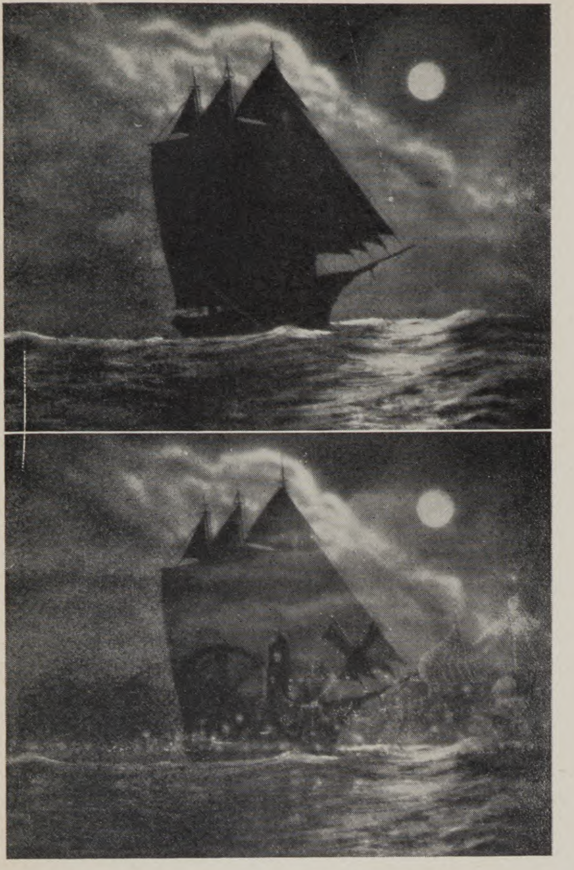
*Guest-instructor in "direction and story-construction" at the "New Film Group."



A simple double exposure. Above, first exposure of ship. Below, second exposure—a shore scene—added.

When to Use Double-Exposures

by

Walter Blanchard

Re-written for Aug '50 a/c

DOUBLE-EXPOSURE can be more than a cinematic trick; it can enable us to tell things which could not so effectively be told in routine scenes. Double-exposed scenes are naturally harder to make, but they are often valuable footage-savers.

Reduced to the most elementary terms, multiple exposure consists simply of photographing a scene, stopping the camera and winding the film back to the starting-point, and then exposing on some other action which we want to see superimposed upon the first shot; the result may be an obviously twice-exposed scene, or an apparently normal picture in which the same person appears twice, according to the methods we use.

Double-exposure work is naturally easiest in a camera which permits winding the film backwards. The Cine-Kodak Special is one of these outfits, also the late Victor Model 5. With these cameras, all that is necessary is to keep accurate note of the footage-meter's reading at the start of your No. 1 take. When the camera stops, slip the lens-cap onto the lens, and wind the film back until you have rewound the proper footage. All there is left to do is to remove the lens-cap and make your second exposure, making sure, of course, that the two scenes end together.

If your camera won't wind back the film, you can still make double-exposures, but you will need either a darkroom or a changing-bag. Before you make your first exposure, slip the camera into the changing-bag and make a little notch in the edge of the film (not too big!) at some definite point; I would suggest notching either just above or just below the aperture-plate, so that any variation in the size of the film-loops will not make your matching inaccurate. Then shoot Take 1 in the usual way, again keeping careful note of the length of the scene. Then—back to the changing-bag. It isn't hard to re-wind the film back to the original starting-point, for you will have the notch cut in the edge of the film to tell you when that point is reached. Re-thread the camera (still in the dark) with the notch in its original position—and you are ready for Take 2. Once you've got the hang of it, you can make triple, quadruple and even more multiple exposures surprisingly easy. But—one word of warning: if you use this film-notching method, be sure to always have your notched starting-point at the same place in relation to the aperture!

So much for simple superimposed effects. Suppose you want to get what the professional calls a "split-screen" effect, in which the background is normal, and the double-exposure consists in having the same person appear twice in an apparently normal shot? This calls for the use of a matte which will cover up one side of the frame, so that you expose only half the picture at each take. The place for such a matte is right in front of the film, as close as is possible without actually scratching the emulsion. The Cine-Kodak Special has a matte slot into which the thin metal masks can be slipped; but with other cameras, you've got to improvise your own mattes. You might think that by simply covering up half of the lens, you would get the matted-off effect you want; but this is not the case, for covering half the lens will only cut down the amount of light reaching the film, without in the least obscuring the picture. To actually block off part of the frame, you must use a matte in the aperture. If you plan to do a great deal of split-screen work, it may be worthwhile to take your camera to a really good cinecamera-mechanic, and have a regular professional matte slot cut into the case; but for most ordinary purposes, simpler and less expensive methods can be improvised. In some cameras, like the Filmo, you can easily fit a little round plug into the circular hole between the shutter and aperture, and either cut the matte in the plug, or by making the plug tubular, with a retaining collar screwed into it, fit interchangeable mattes made of small discs of thin, dark metal, cut to the desired shape. In some cameras, this hole in front of the aperture is threaded, so your matte-holder can be threaded to screw into it, assuring a light-proof joint; in other types, a fairly snug-fitting holder of soft rubber might be better. In the Model B Cine-Kodak, the front aperture-plate is removable, so you can fit your mattes directly onto the aperture-plate, making them of opaque tape, or of thin, blackened shim-metal, held in place with scotch tape.

In any event, two mattes are needed: one to cut off the

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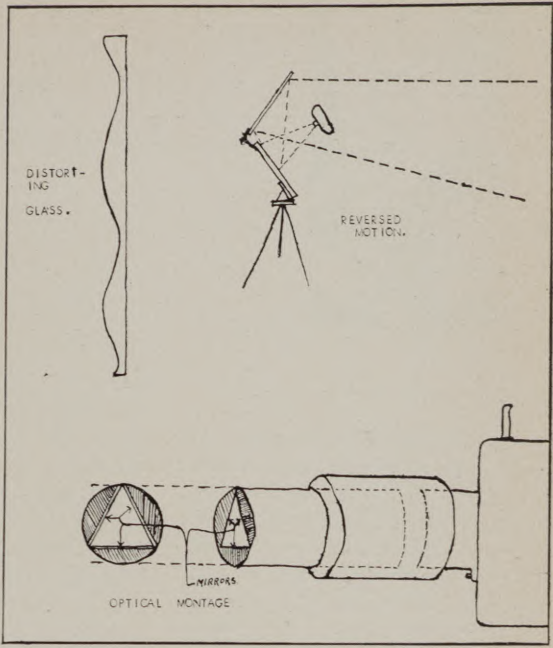
Optical Tricks You Can Do

by
Jerome H. Ash, A.S.C.



DID YOU ever see a close-up of a person, with a number of smaller reproductions of the close-up revolving around the edge of the picture? It sounds like a terribly intricate trick: but actually it can be done very easily, in any 16mm. or 8mm. camera, with the aid of a simple gadget that anyone can build for little or no expense.

The device works on the principle of the kaleidoscopes we used to play with when we were children. With it, we can get a picture in which the center, which gives us the normal shot of our subject, is triangular, five, six, or eight sided, and with a corresponding multiplicity of smaller images of the subject either standing still around the center, or revolving around it.

The first thing to get is a cardboard tube about the size of the front of your lens. The cardboard core from a roll of toilet-paper will do excellently, or if you want to be esthetic, a cardboard mailing-tube. The tube should be four or five inches long—just how long will depend on the focal length, angle, etc., of your lens.

Next, get some strips of the thin strip-mirrors used in making ornamental flowerpots, furniture, and the like. These should be the same length as your tube; the width will depend on the size of the tube, and the number of sides you want your central image to have. If you want to start out simply, choose a triangle, and get three mirror-strips, just wide enough so that the three will fit snugly into the inside of your tube. Pack the rest of the tube with plastic wood, gesso, or the like, and fasten the mirrors into place. Then make up a little cardboard collar which will slip over your lens-barrel at one end, and over your tube at the other. The collar should overlap the tube considerably, so your kaleidoscope will be well supported: it should not, however, be so snug a fit that the tube can't revolve easily.

That's really all there is to it. Of course, if you are one of those home-workshop fans, you can turn the tube and collar out of wood, metal or bakelite, and make it a lot better looking; but the cardboard one will do the trick quite as well, and cheaper.

Using the device is simple. You simply slip it onto your lens, and there you are! In shooting, for instance, a close-up (the trick is usually most effective with close-ups) the actual center of your picture is photographed in the normal way, and you get a normal close-up. The edges of the frame, though, pick up the various reflections and re-reflections of the subject in the little mirrors, so if you use three mirrors, you will have a triangular center, with about 18 smaller images of the same thing ringing around it. Naturally, these won't be as well-exposed as the direct image—the re-reflections will be darker than the reflections—but if your exposure is good, they will all show up interestingly.

If you want the outer images to revolve around the center, simply revolve the tube. I've found a very handy way to revolve the tube smoothly is by wrapping a bit of string around it, and pulling on the string.

If your camera is one which, like the Cine Kodak Special, permits you to wind backward, and to use mattes for double-exposure work, you can get some added effects by working out a pair of mattes which will permit you to use the center image for one exposure, and the reflected images for the other exposure. That way you could, for instance, show a close-up of a young man in love, obviously thinking of his sweetheart, who is seen in a dozen or more smaller images, revolving bewilderingly around his head. The more mirrors you use, the more of the smaller reflections you'll get.

Another interesting optical trick is done by the aid of a small piece of clear, flat glass, which you have had ground by a glass-shop so that one side, instead of being flat, is rippled. The ripples can be large or small; large ones, I think, give the most interesting effect. The glass itself needn't be large; I'd suggest making it about the size of one of Harrison's fading-glasses, so that it can be used in a Harrison sunshade. As the curved parts of the glass come in front of the lens, you'll get all the effects of an amusement-park distorting mirror. You can use it stationary, or (and this is best) you can slowly slide it past the lens, either up and down or across. The entire picture will undulate and distort itself, stretching and shrinking. I've used this gadget a number of times to give an earthquake effect.

Here's a trick I used in making "The King of Jazz." Two of the leading players were the "Sisters G," a celebrated dancing team of two beautiful girls, as alike as twins. One of their sequences we introduced with a close-up of the girls, showing only their heads—but the heads were multiplied by two—two heads being upright, the other two inverted.

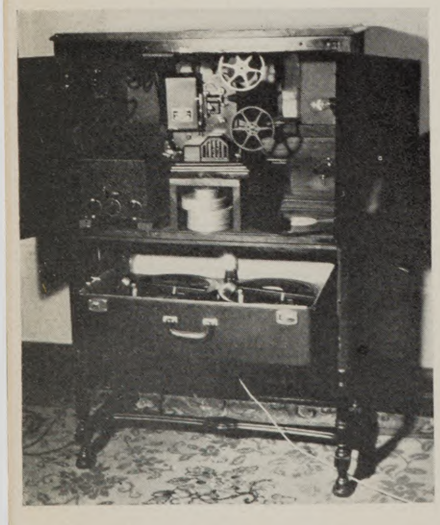
Continued on page 130

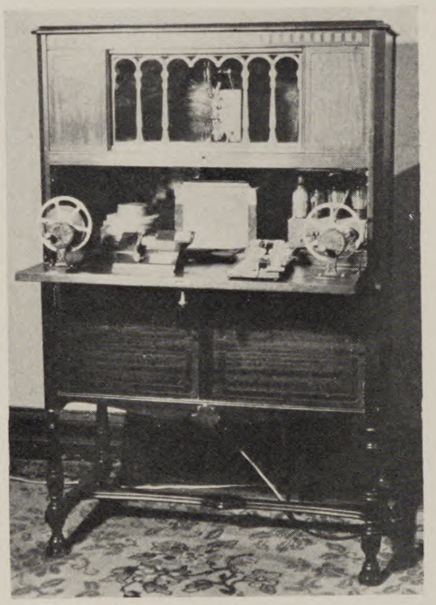
A HANDY GADGET

Recently, I built a dual turntable outfit to add to the enjoyment of my hobby, movie making. After trying my films out with music and sound effects, I found I had several problems on my hands. Number one, was to find a way to quiet my projector. The noise of it was distracting from the music. The other problem was to either move to a larger apartment or find some way of condensing my movie paraphernalia. What with one table for my turntables, amplifier, and stack of records, another for my projector and reels, it was getting so that there was no room left for guests. The enclosed pictures show you how I solved my problems.

The combination projection, editing, and sound cabinet originally housed an Atwater Kent Battery Radio Set, and was purchased from a used furniture dealer for the sum of one dollar. The cloth back of the speaker grill was removed and replaced by a sheet of thin plate glass.

A small platform was built to bring the projector lens up to the window. A board, the same dimensions as the top of the platform, bolted loosely in the middle to the platform, allows the projector to be turned around to be threaded. I cut a hole in the top of the cabinet just above the lamp house. This allows the warm air to shoot out into the room. A hole just above the turntable section of the cabinet makes an inlet for the cool air. When running the projector for three or four hours continuously, I usually, as an added precaution to prevent the film from drying out, place a small bowl of water with a sponge in it inside the cabinet.





The cabinet is wired with four electrical outlets. This takes care of everything including a neon lamp which I use as a pilot light for threading and changing reels. The back of the cabinet was covered with a three-ply board. This I cut in half, attached hinges, and made doors out of it. In operation, everything works like a well oiled machine. The reels for the evening's show, are kept inside the cabinet. The records, in the order that I want them, are stacked on top of the cabinet, so you see there is a place for everything, and starting the projector, I close the doors and shut out ninety per cent of the noise. I am now free to give my undivided attention to the musical end of the program. The amplifier controls in the cabinet are turned up so that I need never bother with them. All fading in and out, etc., I do with the pick-up arm controls.

When the show is over, I rewind all reels, put the lid on turntable case, push the cabinet back against the wall, and there I have a piece of furniture instead of a lot of cases lying around.

When you want to do your splicing and editing, pull up a chair, pull down the drop panel, and you are all set to go.

To me, living in a small apartment, this thing is a boon. From the pictures, you will see that it is a Model 60, 8mm projector, but this idea could just as easily apply to a 16mm machine.

Very attractive radio cabinets can be bought for two or three dollars, but you must go to storage warehouses or used furniture dealers to get the old battery-set cabinets, as they are the only ones long enough to accommodate two phonograph motor systems. I am sure that there are very few cities in the country where you can't pick up cabinets for a mere song.

—ARCHIBALD MACGREGOR.

HERE'S HOW

by A. S. C. Members

"I have tried making a shot of my wife sitting in front of a mirror, showing her in the foreground, and a front-view of her face reflected in the mirror. But I can't get a good focus. What should I do?

—L. A., Kansas City.

In photographing reflections in mirrors, most amateurs make the mistake of focusing on the mirror itself, rather than on the object reflected. That is, if your mirror is five feet from the lens, and the subject three feet from the mirror, your focus is not the five feet to the mirror, but the distance from lens to mirror to subject—in this case, five feet plus three feet, or eight feet.

Where the difference between your foreground, which you want in focus, and the subject reflected in the mirror, is too great to be accommodated normally, split the difference in focusing your lens, and stop down as much as possible, to increase the depth of focus.

When you are working close to a mirror, you will sometimes be troubled with a double reflection, one image from the silvered rear surface, the other from the front of the glass. Again, stop down and split the focus. The same procedure is sometimes necessary when using a pane of plate-glass for reflecting, as suggested in an article the writer recently contributed to this magazine.

—Jerome H. Ash, A.S.C.

"What is the best way of making wipes with my Cine-Kodak Special?"

—W. B., Beverly Hills.

Probably the best way of making wipes with the "Special" is to use a mechanical wipe device, like the Du-Morr. Several articles have also appeared in these pages telling how to make such a gadget yourself. The principle is simple: just gear a forward-extending shaft to the hand-crank of your camera (Meccano gears will do quite well for this), and fit some form of slip-clutch so you can throw the device in and out of gear. The wiping blade will fit onto the forward end of the shaft, and when you slip the clutch in, the blade will travel into the scene. The blade should be reversible, so that you can make double-exposed wipes, wiping one scene off with the other.

If you don't want to do this, the best thing to assure even wipes is to fit a framework onto the front of your camera so that the wipe-blade will be several inches in front of the lens, and give a good clean line. Have the support for the blade calibrated, and time your wipe by counts. If you start with your wiping blade clear out of the picture at "one," and finish with it obscuring the picture at the count of "ten," clearly at "five" the blade should always be half-way through its travel. A little practice will enable you to make well-timed wipes by hand this way; but a mechanical device is always better.

—Vernon Walker, A.S.C.

"My interior scenes are well-exposed, but they look awfully flat. What's the matter."

—I. C., Brooklyn, N.Y.

From your description, it seems that your scenes are flat because you have used a perfectly flat lighting, the same on both sides. The remedy is simple: use a little more light on one side than on the other. You can do this either by using two lamps on one side, and one on the other, or by putting one lamp nearer the subject than the other.

—L. Guy Wilky, A.S.C.

"Can I have duplicates made of my Kodachrome pictures?"

—B. B. S., Savannah, Ga.

It is not possible as yet to get color duplicates of Kodachrome film, though in time such a service may be available. Several laboratories are understood to be making black-and-white duplicates from Kodachrome with excellent results: but it must be understood that these dupes are in black-and-white, not in color.

—Charles G. Clarke, A.S.C.

"Which of the 8mm cameras is the best for stop-motion animation work? Is any 8mm camera fitted with a single-frame movement?"

—W. D., New York.

We can hardly recommend any specific product in these pages; but all of the "8's" are excellent cameras. We do not believe that any of the regular 8mm outfits has a built-in single-frame movement, but a single-frame control can readily be added to almost all of them. The manufacturer of the camera you choose could probably fit such a device for you on special order; and at least one electrically-controlled single-frame device is commercially available.

—Wm. Stull, A.S.C.

"I had a Filmo 75 for many years, but recently acquired a Filmo 70. All of the films I have made with the new camera are badly overexposed. What is the reason?"

—J. W. C., Portland, Ore.

The Filmo 75 has a shutter-aperature of approximately 135°, while the Filmo 70 has a much larger opening—216°. So while you were probably using the same lens-settings you customarily used with your earlier camera, the shutter of the new camera was letting in a lot more light. Figuring it out as a matter of exposure-time, the 135° shutter gave you an exposure of about 1/42 second, while the 216° shutter gives 1/24 second. This is quite enough to account for your trouble. The remedy, of course, is to stop your lens down to a smaller opening, reducing the amount of light reaching the film.

—Jackson J. Rose, A.S.C.

"I have a screen three feet wide, but in my living-room, where I most frequently project my films, I haven't room enough to get the projector far enough from the screen so as to fill the screen. I have about 12 feet to work in, and the biggest picture I can get is less than 27 inches wide. How can I fill my screen without moving into a new house?"

—E. Y. J., Pittsburgh, Pa.

Evidently you have a 2" lens on your projector. To enlarge a 16mm frame large enough to fill your three-foot screen with this lens, you would have to have the projector nearly 16 feet from the screen. However, by using a projection lens of a shorter focal length, you can get a larger image. If you get a 1" lens, you can comfortably fill your screen with an eight-foot throw; if you get a 1½" lens, you can get the three-foot picture with a throw a few inches shorter than your present twelve feet.

If you don't feel in a position to purchase a new lens immediately, you can probably fill your screen by using a mirror. Set the projector up at right angles to the direction in which you really want to project, and use a good mirror to bend the light around the corner of the screen. Using a mirror less than a foot wide, you can add the necessary four feet to your projection throw by projecting four feet across the room to the mirror, and then twelve feet down the room to the screen. When using this trick, you must of course

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Films I Have Used

by

Elmer G. Dyer, A.S.C.

DID YOU ever sit back and think about the films we used to use (and be darned glad to get!) just a few years ago? Orthochromatic emulsions, not much faster than today's positive, and hardly more color-sensitive—badly perforated—unevenly coated—incredibly contrasty—and as grainy as a flour-mill. There were no factory experts on hand to help us with our troubles, and when anything went wrong with the film it was just too bad, for the manufacturers were usually far too impressed with the importance of their product to admit a mistake.

It doesn't take much stretching of the memory to recall the days when there was just one kind of film (two, if you counted positive), and you had to shoot your scene on that one emulsion. Today, you've got about a dozen different types to choose from: Ortho, regular pan, superpan, Super-X, fine-grain background pan, Infra-red sensitive pan, reversal background pan, variable-density recording stock, variable-area recording stock, duplicating stock, bipack red-ortho, and at least half-a-dozen varieties of positive, clear and tinted. And if you can't suit yourself from one manufacturer's stock, just step next door and try his competitor's assortment. If Eastman doesn't make what you want, DuPont or Agfa may—and if none of them do, they will probably be glad to make it for you!

Most of us are so accustomed to regard film as a matter-of-fact incident in our work that we never think of the amazing way the raw film industry has grown up about us. At the turn of the century, Eastman and Lumiere were about the only manufacturers of motion picture film. Their first commercial product wasn't even orthochromatic, and the rolls were about 50 feet in length. In 1901, all the film-factories in the world produced but 29,000 feet of negative film per week; by 1930, with probably fewer firms making film, negative production was approximately 65,000,000 feet per week. Or, to put it in more easily understood figures, the factories were turning out 156,000 miles of film every week. You'd think that this tremendous production would keep two or three dozen factories busy, wouldn't you? Actually, most of this footage comes from three main factories—Eastman, Agfa-Ansco, and DuPont, with negligible amounts dribbling from a few smaller makers like Gevaert in Belgium and Zeiss and Perutz in Germany.

On the other hand, any list of the old-time film-brands would include Eastman, Ansco and Bay State here in America, Lumiere and Pathe in France, Ensign in England, Cappelli in Italy, Gevaert in Belgium, and Agfa, Goertz and Perutz in Germany—a total of thirteen. For once, 13 proved an unlucky number, for see how they've shrunk: DuPont and Pathe have joined forces, and Agfa and Ansco; Perutz seems to be restricted to Leica film, Gevaert is rarely heard from—and the rest have (as far as cinema film is concerned) vanished completely.

And how different was buying film in the old days! Of course, my recollections don't go quite back to the days of the Patents Company, when a film-buyer had either to show a licensed camera or bootleg his film: but I can recall the time when J. E. Brulatour, whose name is synonymous now with Eastman Film, was the American agent for Lumiere film! In those days, and for many years after, buying film was quite a formal affair. You went down to Brulatour's office, and placed your order with Perry Conner (who took your money at the same time). Then Perry would send back to the factory for your roll of film, which—in due and deliberate time—would be manufactured and shipped out to him, and in turn delivered to you! The process was the same whether you were (like me) a struggling free-lance cameraman who wanted 200 feet of film, or a big studio which wanted 200,000 feet. I think it was Frederick L. Kley who, as manager of the Lasky Studio, finally convinced the Brulatour organization that there might be some advantage in keeping a few feet of film in stock here in Hollywood.

One of my more embarrassing moments came a number of years ago when I was on location in Northern California, shooting an extra camera on a big picture. After an especially important day's work, I received an explosive telegram from the laboratory because I had apparently been fading out at about fifty-foot intervals, and fading in five or ten feet later. Usually, the fades seemed to come right in the middle of the scenes! Now I knew I hadn't been playing with the dissolver, and I was just as sure that the camera itself was in first-class condition. Just the same, I was in the dog-house for a long time—until someone discovered that in the particular batch of film my roll had come from, the emulsion was only partially coated, disappearing completely at fifty-foot intervals!

Perforations gave us a lot of trouble, for there were a number of different standards—square, round, and something resembling our present rectangular hole with rounded ends. If you got film perforated wrongly for your camera, you were just out of luck! Most of the studios used to buy their film unperforated, and perforate it themselves. The Biograph people went even a step farther than that: their old Biograph camera took unperforated film, and perforated it as it made the picture!

And speaking of perforations, framing was another fruitful source of grief: some cameras had the frame lines fall between the perforations, like our present standard, while others had the frame line even with the sprockets. Another incident related is that when the first Lasky picture—the original version of "The Squaw Man" was finished, it was suddenly discovered that Cameraman Gandolfi had used two cameras, each with a different frame-

Continued on page 128

WINNERS

GRAND PRIZE: $250.00 Cash . Dr. F. R. Loscher, Los Angeles, Calif., for his 8mm picture, "Red Cloud Rides Again."

1935 Honors

Again

CINÉ-KODAK EIGHT COMES IN FIRST

Dr. F. R. Loscher of Los Angeles won the Grand Prize in the 1935 American Cinematographer Amateur Movie Contest with his Ciné-Kodak Eight, Model 60.

Mr. T. Okamoto of Japan won first prize for Photography with his Ciné-Kodak Eight, Model 20 . . . the same camera with which he won this same prize in the 1934 contest.

..and both used Ciné-Kodak Eight Film

EASTMAN KODAK COMPANY, ROCHESTER, N. Y.

Wheels of Industry

New Film Splicer

● A new Bell & Howell Film Splicer for 16mm silent, 16mm sound, and 8mm film is announced.

As with the Laboratory Splicer, each film end is located on pilot pins once only. After each film end has been placed between its pair of clamp plates, the emulsion is removed from the left film end with a dry scraper. Then cement is applied, and the right clamp plates are immediately lowered, shearing both film ends and bringing the bonding areas together in a single operation. A lock maintains the pressure until the splice has set—a matter of seconds.

The new splicer, known as Model 136, makes the exclusive B&H diagonal splice. Its pilot pins engage perforations on one side of the film only, so that 16mm sound film and 8mm film are handled as easily as 16mm silent film.

Model 136 has a cast metal base designed to take, as Add-a-Unit equipment features, a B&H Direct Viewer, or a two-way Rewinder, or both, in the same way as the previous amateur splicer. The Direct Viewer, equipped with a light, lens, and ground glass translucent screen, magnifies the film images for the operator's convenience in finding cutting places. Rewinder units are available in either 400- or 1600-foot reel capacity.

B&H Safety Film Cement for Splicer 136 is supplied in a new, improved bottle. The small neck of this bottle reduces evaporation. The brush is attached to a screw cap which gives positive sealing.

Sound Film

● Two new single-reel 16mm sound films of the South Seas, photographed and narrated by Arthur C. Pillsbury, are offered by the Bell & Howell Filmosound Library.

"Life in the South Seas," a trip to the Samoan Islands, shows in detail the life of these happy-go-lucky wards of Uncle Sam, and presents time-lapse photography of the development of the cocoanut plant and the uses to which it is put. The building of the South Sea Islands by two widely different methods, coral and volcano, is portrayed.

"Life Under the South Seas," the second film, shows undersea diving with water-tight motion picture equipment and the photographic results; time-lapse pictures of starfish, anemones, barnacles, hydroids, jellyfish, sea pens, sea urchins, and many kinds of fish.

Leica Exhibit on Tour

● The Second International Leica Exhibit is now on a tour of some of the principal cities in the East. This collection of outstanding Leica pictures includes prints by famous professionals as well as amateurs. The range of subjects treated and covered includes an almost unbelievable variety of photographic activities. Candid, news, clinical, scientific, color, aerial, pictorial, portrait, surgical—are just a few of the many uses to which the Leica serves, as shown in this exhibit.

In connection with the Second International Leica Exhibit, a local Leica contest is held in each city. Local Leicaites are invited to submit their best prints in competition for merchandise awards and prizes. The itinerary of the Second International Leica Exhibit is herewith given, and interested readers should secure complete details from their local photo dealers who will be in possession of the final details by the time this appears.

Cleveland, Ohio—Mar. 3rd to and including Mar. 7th Higbee Co.—Lounge Room.

Detroit, Mich.—Mar. 10th to and including Mar. 15th.

Chicago, Ill.—Mar. 18th to and including Mar. 24th. Blackstone Hotel.

Milwaukee, Wis.—Mar. 27th to and including Mar. 30th.

Minneapolis-St. Paul, Minn.—Apr. 2nd to and including Apr. 6th.

St. Louis, Mo.—Apr. 9th to and including Apr. 14th. St. Louis Public Library.

Indianapolis, Ind.—Apr. 16th to and including Apr. 19th.

Cincinnati, O.—Apr. 22nd to and including Apr. 25th. Netherland Plaza—North Exhibit Hall.

Columbus, O.—April 28th to and including May 1st.

Pittsburgh, Pa.—May 4th to and including May 9th. William Penn Hotel.

Baltimore, Md.—May 12th to and including May 16th.

Washington, D. C.—May 19th to and including May 23rd.

Philadelphia, Pa.—May 26th to and including June 3rd. Boyer Galleries—Broad St. Station.

16mm Film Sources

● Victor Animatograph Corporation has issued their Fifth Revised Edition of the Victor Directory of 16mm Film Sources.

This is the most complete and comprehensive work of this kind that we know of. It is the effort of the publishers of this book to list all known sources of 16mm silent and sound films. It is claimed that practically the only sources not included are those that refused permission to list them in the Directory in spite of the fact that these listings are free of charge and entirely without obligation.

This Directory is indexed and made as comprehensive and easy to use as it is possible to make a directory. It will be sent by Victor Animatograph Company, free of charge, to present and prospective owners of 16mm equipment requesting it. Distribution is from the Advertising Department of the Victor Animatograph Corp., Davenport, Ia. Free distribution is limited to one copy per person. If additional copies are desired, they will be supplied at 50c each.

Soft Focus Lens

● According to an announcement from Burleigh Brooks, he has placed on the market a Rolleiflex lens accessory known as the Duto Folleiflex Soft-Focus Lens. From the description it appears that it is only necessary to place this over the regular lens, the same as a portrait lens is attached. It apparently does not take the place of the existing lens.

Here's How

Continued from page 121

reverse the film in the projector, threading it with the emulsion AWAY from the lens instead of toward it, so that left and right will be in their proper relationship in the projected picture, and the letters in titles will be readable. Don't worry about the mirror in focusing: just focus in the usual way until the picture is sharp on the screen.

—Dwight Warren, A.S.C.

Shooting a Prize Winner

Continued from page 115

for reinforcement. These were of various sizes and were very hard. I have learned that every amateur should have some kind of softer reflector for front lighting and faces because many times the hard silver reflector will give too much light. Many of our Indian shots were taken without the use of reflectors because through experimentation it was found that our make-up could be burned out and we would entirely lose our Indian make-up, so in most cases they were back-lighted with very little front light.

For my personal screening of this picture it is accompanied by a musical score, supplied by phonograph records. During the opening sequence the music is of slow rhythm, gradually increasing to an Indian war dance, then as the covered wagons appear, of course we must have a medley of "Oh, Susannah," as no wagon scene is complete without this well-known selection. Then in the battle sequence we raise to a very dramatic pitch which gradually tapers off to return to the opening rhythm for the final part of the picture. We were able to cover the entire picture with a selection of only four recordings which is a thing that should be done if possible, because of the ease of changing these records during the running of the picture.

The making of this picture was not only a great deal of fun for all who participated, but it was an education as well. It was the first picture of this type that I had ever attempted, and I look forward to the possibility of trying something similar in the future.

Model **25 ANIMATOPHONE**

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Price need no longer be an obstacle to the enjoyment of Quality sound picture reproduction. Model 25 Sound-on-Film ANIMATOPHONE (for silent and sound projection) is priced at only $360.00! In addition to embodying the ingenious simplifications and mechanical superiorities that have always been traditional with Victor Cine products, Model 25 has the distinction of being the World's Smallest (45 lbs. total), Most Compact, and Lowest Priced HIGH QUALITY Sound Picture Reproducer. It is the ONLY 16mm sound projector that may be operated on D. C. as well as A. C. without use of converter. Ask for demonstration. . . . Let your own eyes and ears prove that ANIMATOPHONE 25 is without rival.

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A HANDY BOOK

$200 Worth of Information for $2.00

That is what one Cinematographer said about this book, by Jackson Rose, A.S.C. He looks upon it as one of the most valuable pieces of cinematographic information he has.

Here are some of the subjects as listed in the index:

- **Color Filters and their use.**
- **Effect Filters and their use.**
- **Filter Factors for Agfa Films, Eastman Films, DuPont Films.**
- **Filter Factor compensator.**
- **Camera set-ups for Close-ups, Medium Size, Full Figure.**
- **Motion picture lenses, Astra, Cooke, Hugo Meyer, Bausch & Lomb, Dallmeyer, Goerz, Leitz, Zeiss.**
- **Lens Angles for lenses from 25mm to 200mm.**
- **Depth of Focus chart for lenses from 1″ up to 100mm.**
- **Ultra Speed chart and a number of other valuable charts and tables.**

AMERICAN CINEMATOGRAPHER
Handbook and Reference Guide

●

Here's a book the Advanced Amateur who takes his movie shooting seriously and who wants useful mathematical information at his finger tips, will find one of his most valuable possessions.

The Hand Book and Reference Guide is a book of useful tables. They are tables containing information the professional cinematographer in Hollywood's studios uses every day. Information that he in the past had to work out mathematically every time the problem presented itself. He had, in some instances, to use the "trial and error" method to arrive at the results given him in this book at a glance.

It is the part of practically every first class cinematographer's equipment . . . because cinematography in its present form and as practiced in the studios is a combination of art, chemistry and mathematics.

The Depth of Focus table alone would prove very valuable to any amateur.

In a very quick and condensed form it gives a volume of information on Filters. The title of this section is "Color Filters and Their Uses." The title alone explains fully what is told in those few pages.

Only a limited number of these books were printed and the selling price is $2.00 each.

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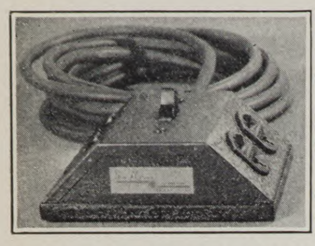

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DUNNING GRAINLESS METHOD
DUNNING PROCESS COMPANY
932 N. La Brea Avenue
Hollywood, Calif.
(35mm reduced to 16mm)

FILMS I HAVE USED

Continued from page 122

line; and part of the picture framed one way, part the other. For a while it looked as if the whole venture would be a total loss. Finally Cecil De Mille and some of the technicians took the negative back to the Lubin Laboratory in Philadelphia where they cemented blank celluloid strips along the edges of the entire negative—and reperforated the whole film by hand!

When you compare the way we shot our early-day film and the methods we use now, the matter of exposure stands out amazingly. With our old, ultra-slow emulsions we used to stop down to around f:45 (yes, I mean forty-five!) on exteriors. Today, with an infinitely faster film, we don't use nearly such small stops—in fact, we don't often have 'em on our lenses. f:16 or f:22 is regarded as stopping down a lot, while often we open the lenses 'way up—even shooting wide open at f:2.7—and a reduced shutter-aperature. What's the answer? Changes in laboratory methods, of course. In those old days, they used developers which were so strong that a modern film would develop if you only waved it over the tank—and they steeped their film-racks in that dynamite soup. The result was a negative that looked almost as black as a piece of steel, and was a matter of soot-and-whitewash contrast. Grain? Nobody gave it a thought—but it was terrible, judged by modern standards. No wonder folks called them the "flickers," and complained of eyestrain!

I haven't the courage to open the argument over who first introduced Panchromatic film. Besides, Joe DuBray, A.S.C., told me the other day that when he first came to this country for Pathe, back in 1909 or 1910, Pathe had a film that was so sensitive to orange as to be almost panchromatic. At any rate, Joe says, it was more panchromatic than the Verichrome and Plenichrome emulsions we use in our still cameras today, so it must have been pretty good. With it, he said, he was able to shoot on days when other companies couldn't, and also later in the yellow evening light. Apparently, that Pathe outfit was a pretty modern bunch, for even back in 1912 or so their Bound Brook laboratory used developing-machines, with spray-washing, had a real scientific research department, and even practiced silver recovery from the used hypo solutions!

My own first experience with Panchromatic film came years later, after the war, when I was one of the first three cameramen to use panchromatic cine film in photographing the Grand Canyon. The film I had was Goertz stock, and it was a mighty good film. I used it for a whole series of travel-shorts I made, called "The Honeymooners in the National Parks." I still recall that some of those subjects played at Grauman's Egyptian theatre, and (thanks to the Panchromatic film) got unusually favorable reviews.

Of course, the difficulties we had with those early-day Pan films would in themselves fill a book. Laboratory-men would forget they were developing Pan, and develop by red light, pulling the racks out of the tanks every so often to see how they were developing. In one instance, I recall that I got peculiar white flashes every eight feet, caused, I finally discovered, by a laboratory-assistant who carefully loaded the racks in the dark, but stacked them in a corner to await their turn in the tanks—while he calmly smoked a cigarette! The glow of his fag was enough to fog the film at the places where it curved, unprotected, over the top bar of the developing-rack.

No discussion of early-day films and filming is ever complete without mention

LEICA or Contax plus a good negative plus good DEVELOPING makes a good picture. We use Super-Soup for developing.

Morgan Camera Shop
6305 Sunset Blvd., Hollywood, Calif.

FOTO - FADE

Make fade-ins and fade-outs with Foto Fade on reversible film after development. Used in Hollywood studios. $1.00 brings you enough for a hundred fades.
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of that bugaboo—STATIC. For the benefit of those whose memories don't go back that far, I'll explain that static was a pleasant, flickery, white marking that looked as though you had inadvertently set up behind a particularly naked and jittery tree. We knew it came from a discharge of static electricity—but we didn't know when or how. And everyone had his own idea as to how to prevent it. Billy Bitzer and others swore by intricate spirit-lamps which warmed the cameras (static only appeared in winter weather). Others advocated—and used—metal cranks which, they said, grounded the camera through the arm of the operator, and so dissipated the static charge. Another man had a tiny metal brush which swept the surface of the film to absorb the charge, while another of the old-timers filled his camera with such an intricate coil of wires that if there had been any radio in those days he could have tuned in Timbuktoo! (P. S.—None of them really worked.)

But I think the only one of them all who really hit the cause and cure of static was Arthur Edeson, A.S.C. He reasoned that static was due to over-rapid changing of the temperature of the film. So when he made any winter exteriors, he would always load his magazines the night before, then pack them into an oilskin bag and bury them in the snow overnight. After exposure, he was equally careful about warming the film slowly. And he had no trouble with static, even at times when, at such Eastern winter locations as Lake Placid or Saranac Lake, there would be four or five companies shooting—and all but Arthur getting ruinous static!

The proof of the pudding, so to speak, is the fact that many years later, when Clyde De Vinna, A.S.C., was in Alaska photographing "Eskimo," long after static had been forgotten as conquered, his last shipment of film broke out with a lovely case of static-markings. The film, he says, had been stored for weeks virtually in the open (which was 30° below zero or worse). After shooting, the film had to be rushed back to the California laboratory, so it traveled part way by air, part way on a nice, warm boat (probably somewhere near the boiler-room), partly by train, and partly by air mail—undergoing several very sudden and extreme changes of temperature.

But as far as the rest of us are concerned, Eastman's introduction of "X-Back" film abolished static. This happened about 1915. The "X" backing was some sort of a resinous backing on the film which held the static charge. It's still included in modern films, they say. What was it? No one knows but the Eastman experts—and they won't tell!

When to Use Double Exposures

Continued from page 118

part you want unexposed in the first take, and the other to shield the already-exposed section when you make the second take. The edges of the mattes should be smooth, and the mattes should naturally be exactly the opposite of each other.

Making the shot is simply a matter of inserting the first matte, shooting, rewinding, changing mattes and shooting again. Remember, by the way, that if you want to matte out, say the right-hand side of the picture, the matte must cover the LEFT-HAND side of the aperture, since the lens reverses and inverts the image on the film.

In making split-screen shots, it is absolutely vital to use a tripod, for the camera must be in identically the same position in each shot, or the two halves won't match. It also helps if you pick your camera set-up so that the matte-line coincides with some definite line in the set, as, for instance, the line formed by shooting diagonally into the corner of a room. The action must naturally synchronize, too: the simplest way to assure this is to rehearse carefully, timing both rehearsal and shooting by slow, deliberate counting. If, for example, you have a shot showing your neighbor sitting reading his paper, when suddenly the door opens, and in walks the same man, the seated man must know when to look up and see "himself," while he who comes in at the door must likewise know when to react to his double's surprise. If your actor knows that at the count of five, his walking image will enter, that at nine, the seated image sees the double, and that at ten, the double bows and speaks, it is easy to make the action synchronize.

"Ghosts," incidentally, can be produced the same way, but without mattes except in case some natural person is to be in the shot; the ghost is a simple double-exposure, so that the background will show through the tenuous apparition.

Now, how to use these tricks! Simple superimposed multiple-exposures can be used to show more or less parallel action, suggested by the basic scene. For instance, if we have a girl whose sweetheart has gone out to a Western ranch, and show the girl reading a letter in which he tells what he is doing, we can double-expose shots of the boy over either a shot of the girl reading, or a close-up of the letter. The same idea can be

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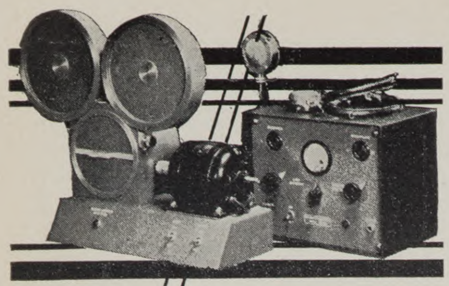

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used to show what a person is thinking about. Let's say Mother is at a bridge-party—but can't recall whether or not she turned off the fire under the dinner dishes: double-expose a shot of Mother playing worriedly, and a close-up of a kettle boiling over on the stove, and you tell the story simply, in half the footage you'd need otherwise. And the same idea can put over something a character is remembering, or show mental confusion, and so on.

Ordinarily, split-screen double-exposure is pretty clearly a trick, and should be used as such. The dual role idea, in which we see the same person beside himself in the same shot, apparently two individuals, is naturally a rather limited dramatic proposition. But split-screen work can be used for other purposes. The most common, of course, is in introductory titles. There, one-half of the split-screen carries a title introducing some person or place, while the other half of the screen shows the person introduced.

This same general type of split-screen can portray parallel action. Say we have two people talking by telephone: a split-screen shot can show both ends of the conversation at once. Or say our two people are going somewhere to meet: the split-screen can show this, too.

By multiplying our exposures, we can get some very interesting montage effects. For instance, using mattes that divide the screen in quarters, we can show four different things going on at once—and if we want to, we can have any one of the quarter-screen scenes change without affecting the others. Lastly, to make the effect still more "montage-y" than ever, we can add a superimposed full-screen exposure over the others. For instance, say we want to show, quickly, the news of some event being flashed abroad by newspapers. One of our four split-screen shots may show a newsboy (preferably in close-up) crying his "Extra! Extra!"; a second might show the delivery-wagons distributing the papers; a third, a close-up of clicking telegraph keys; the fourth, a shot of a man picking his paper up from the doorstep, while over all would be a shot of papers flowing from a newspaper press.

OPTICAL TRICKS YOU CAN DO

Continued from page 119

The answer, of course, was a mirror. I had two semicircular notches cut out of its far edge, and the girls slipped their heads through these notches. The mirror was slanted slightly down: the lens of the camera was just about level with the farther (and higher) edge of the glass, and the nearer edge slanted down enough so that the entire foreground was filled by the glass. The idea works just as well with one person as with two, though not so bewilderingly of course. The mirror should be held steady during the shot, so the trick won't give itself away.

One of the first cinetricks most amateurs learn is the trick of getting reversed-motion shots by turning the camera upside-down. But it isn't always convenient to use your camera in that position. So why not use mirrors to get the same effect? It isn't hard: simply take a couple of fair-sized mirrors, and place them together to form an angle. The upper mirror reflects the scene you are shooting; the lower mirror reflects the image of the upper mirror, and the camera photographs this lower image which is of course inverted. The upper mirror will probably be slanted forward a little, while the lower glass will slant downward at a convenient angle. You can easily mount your mirrors in little wooden frames, and hinge them together. The lower mirror can then be screwed to a tilting tripod-top, or any other handy support.

And right here, I want to clear up the most important thing in photographing mirror-tricks—focus. Some of the people who read my last article on tricks with mirrors came to grief because they tried to focus on the mirror, rather than on the object reflected. That is, if you are photographing a reflection in a mirror three feet from your lens, of an object ten feet from the mirror, your focus will be three feet plus ten feet, or thirteen feet. You can easily see how badly out your focus would be if you set the dial only for the three feet from your lens to the mirror! It is also safest to stop down rather well when photographing mirrors, in order to blend the reflections from the front surface of the glass into the main reflection. For the same reason, the thinner the glass in the mirror, the better for your picture.

With mirrors, you can also get some of the effects of split-screen double-exposure shots without having to wind your film backward. Simply take a thin mirror and set it at an angle in front of your lens—preferably several inches in front of it—with the nearer edge on the centerline of the lens. On one side of your frame, you'll get whatever the mirror reflects; on the other, whatever is directly in front of the unmirrored side of the lens. Where you can use a large title-card, this is an easy way of making those introductory titles where on one side of the screen we read, "Introducing Joe Doakes," and on the other we see Joe himself in action. Here again, focus and stopping down for depth are of the greatest importance. They mark the difference between ruining your shot and getting it.

Balancing Sea and Sky with Filters

Continued from page 114

All too often, when the light was right for me, the wind would be wrong for the sails—and when the wind suited the sails, I'd be faced with a difficult lighting.

As a rule, a front or cross light is the best; a back-light is sometimes effective (especially for night-effects and sunsets), but it also gives rise to tiny, glancing catch-lights on the waves, which can be very troublesome. Sailing ships and sailboats are probably among the most attractive subjects, but to show them at their best, you must understand lighting. The sails are naturally the salient feature: they should look white, clean and billowy. This effect is best achieved when, if you are photographing from the side or ahead, the sun strikes the sails from ahead; shadowed, the sails tend to photograph grey. Photographed from astern, few sailboats are very pictorial, though square-riggers in a strong, flat light are sometimes interesting. Instead of photographing a windjammer from dead astern, however, when you have to use a rearward angle, try to get a rear-quarter view, as this shows the sails to better advantage. Fore-and-aft rigged boats, incidentally, when you are photographing them from the side, look most effective if you are on the leeward side of them—that is, the side toward which the sails billow.

Lastly, when the main object of interest in your scene is people, use reflectors! Remember that the broad expanse of sky and water is, in a sense, a tremendous reflector throwing light into your lens from all angles, and especially from behind the people. If you place your people so they are in a front light, it is not so bad technically, though the artistic satisfaction is doubtful. But if you have them in a cross-light, or in the shade, if you expose cautiously enough so that the highlighted distance is not "burned up," there will be almost no detail in the shadows. Reflectors, combined with 3-N-5 or 5-N-5 filter will solve this problem. Better yet, if you can, place your actors on the shady side of the deck, and use part of the ship—a deckhouse, or the like—for your background instead of the glaring sea or sky.

Finally, remember that all generalities about marine photography are false—including this one. The one fixed rule is to vary your technique to meet the conditions of each individual shot.

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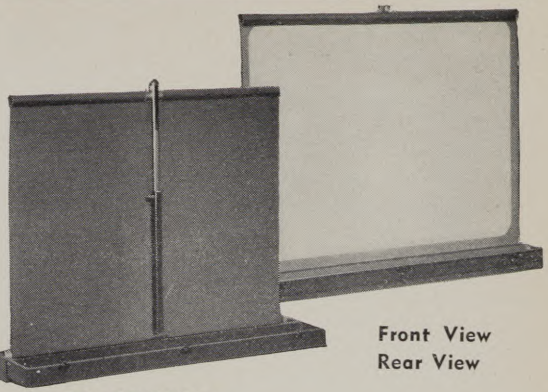

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The Camera Goes 'Round and 'Round

Continued from page 116

SCENE 18: CLOSE SHOT from a low angle from the side, with the camera steady—not panning—of Jimmy as he rides up and down on the board.

SCENE 19: CLOSE SHOT from on the board, directly in front of Jimmy. You can get this by sitting on the board and mustering man power on the other end. We see Jimmy enjoying his ride, the landscape behind him rising and falling.

SCENE 20: MEDIUM SHOT shooting from Junior's seat, straight along the length of the board to frame Sister at the far end. The effect is the same as in Scene 19.

SCENE 21: MEDIUM SHOT, same set-up as Scene 20. Slow your exposure rate down to ——. Sister will be seen bouncing up and down at a furious and comical speed.

SCENE 22: MEDIUM SHOT of the merry-go-round. The children run in, scamper aboard and start it in motion.

SCENE 23: CLOSE SHOT with set-up at level of children's faces. As the platform whirls, the children will one by one come in and go out of focus.

SCENE 24: CLOSE SHOT from the top of your borrowed step-ladder placed close to the platform, shooting down on the children as they ride around.

SCENE 25: CLOSE SHOT from a low angle, shooting underneath the platform. Catch the dangling legs of the children as they come by.

SCENE 26: CLOSE SHOT of Junior, if he is tiny, on the platform holding on for dear life and enjoying himself immensely. Keep the camera on him, panning as he moves around slowly.

SCENE 27: CLOSE SHOT from your seat on the platform, shooting across the merry-go-round at the children seated at that side, as the affair goes round and round.

SCENE 28: MEDIUM SHOT of the children riding. Shoot it at 8 and they will spin like a top.

Complete your picture with similar unusual shots of the children playing on whatever other apparatus may be found at the playground. Look always for the uncommon angle and the possibilities of slow—or fast— motion.

As, for instance, if there is a horizontal bar, have the children perform whatever stunts they can execute. Shoot from odd angles, increase or decrease your shutter speed. The results will be hilarious to the children and bring forth many a chuckle from grown-up viewers when placed on the screen.

More, it will give you valuable experience in the flexibility of your camera and the infinite possibilities that exist in almost every shot for getting away from the humdrum straight-from-the-shoulder scenes by the simple expedient of exercising your ingenuity. Camera angles and different close-ups contribute immeasurably to any picture.

And, to close this continuity, Fade Out on a scene of the children at the refreshment stand noses buried in tall lemonade glasses or with pop-bottles pointed skyward from thirsty lips.

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